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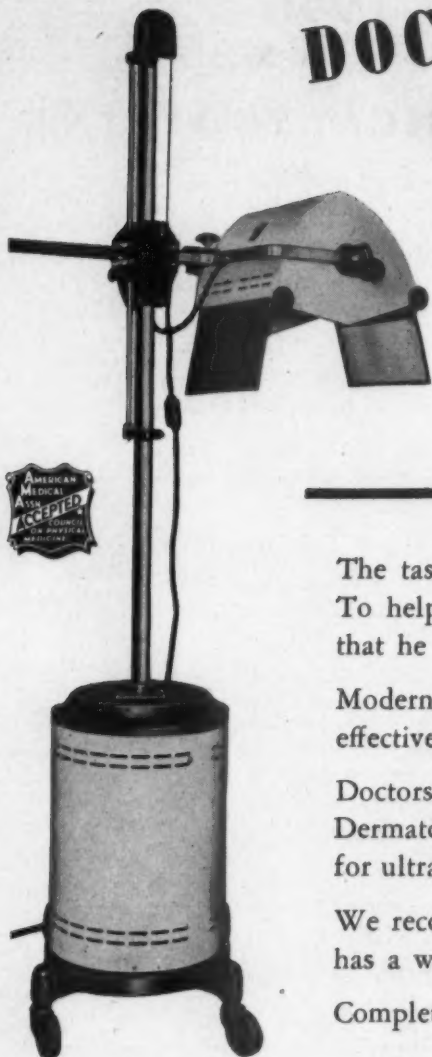
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EDITOR OF THE MONTH

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New York, N. Y.

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PHYSICAL MEDICINE IN BRITAIN

SIR MORTON SMART, K.C.V.O., D.S.O., M.D.

Manipulative Surgeon to His Majesty the King

Consultant in Physical Medicine to the Royal Air Force

LONDON, ENGLAND

Physical medicine incorporating every approved form of physical treatment is an industrial necessity of the future and such treatment must be fully recognized as the inherent right of every insured worker.

Owing to the great advances made in recent years in the knowledge of methods of treatment coming under the head of physical medicine, the subject has become a vast one, comprising many important branches and calling for much skilled technical knowledge. It must be clearly understood, therefore, that the entire subject is primarily a medical one, and because of the many dangers its technic must be carried out under full and complete medical supervision. It is not sufficient to have even highly qualified technicians in charge of cases. Constant close cooperation between the medical specialist and the technician is absolutely necessary because in addition to the need for knowledge of the action and mode of application of the various technics, there is the essential of a wide clinical knowledge, which is the only basis on which successful physical medicine methods of treatment and diagnosis can be founded.

What is physical medicine? A term which comprises so much is not easily reduced to simple factors, but briefly physical medicine may be defined as the employment in the diagnosis and treatment of injuries and disease of the physical and other effective properties of electricity, heat, water, massage, exercises, radiant energy naturally or artificially produced, mechanical measures such as negative and positive pressure, occupational therapy and manipulative surgery.

Physical medicine is thus an integral part of the practice of general medicine, but it is surprising to discover how many physicians, even on the staffs of hospitals, have failed to realize this and to appreciate the fact that exact knowledge and clinical training are required in the practice of physical medicine as in all other branches of medicine. The profession generally, by its lack of interest, has been slow to recognize the great work and effort in all countries of the world of those who have made physical medicine their special study, and it is largely because of this apathy that physical medicine has been somewhat divorced from general medicine, the true relationship being thus concealed. This has done much to retard advance and to promote unqualified practice. Only by trained physicians and registered physiotherapists can physical medicine be established and maintained on a sound scientific basis.

The Chartered Society of Physiotherapists is responsible for conferring on successful candidates a diploma which qualifies them to practice under medical supervision. It is usual to describe members who hold the diploma as "trained physiotherapists or technicians," but those who are not aware of the detailed scope of the society's training and the standards of the examinations do not adequately realize the high status that is conferred on successful candidates by this diploma.

Let us go back to history for a moment. The war of 1914-18 was a great stimulus to physical medicine, and rapid advancement was taking place

when that war ended. Unfortunately, however the ranks of the unqualified were greatly swelled by numerous claimants to special knowledge setting up in practice on the false basis that they had been specially trained in the Services. It is true that certain personnel had had superficial training (in massage and so forth) by short term intensive courses; in this respect their claim was not exactly groundless, but it was obvious that such training was well under the standard of requirement necessary today for the safe treatment of the public by methods which hold many potential dangers. The claim to skill and expert knowledge so often made on the basis of "war experience" is a sure bait to delude the public into believing that special knowledge is possessed.

In the war now ended the leading practitioners in physical medicine, particularly those who had taken an active part in the war of 1914-18, were greatly encouraged to believe that the services and hospitals would be better organized in the light of previous experience. On the instructions of the Ministry of Health certain hospitals under the Emergency Medical Service were ordered to establish physical medicine departments and to some of them medical men with knowledge and experience of physical medicine were appointed. This was a step in the right direction and gave hope that it would lead to such improvement in organization that the heavy demands for facilities for the treatment of sailors, soldiers, airmen and civilians would be successfully met. The results have, however, fallen far short of hopes. One of the chief reasons for failure has been shortage of trained personnel. To a great extent this could have been avoided if greater vision had been used in the early days of the war. There was a long hiatus after the war started—in spite of pressure by those who realized the urgency—before anything approaching adequate organization took place, and during this time the inevitable happened; many trained registered physiotherapists were forced into the Services or into other jobs regardless of their qualifications. In spite of protests, no authority seemed capable of preventing this deplorable loss until it was too late. It was apparently not realized in time that such loss of trained personnel would result in the Services and other organizations, as in the war of 1914-18, trying to make up for it by training unqualified men and women by a short intensive course. Treatment given by such partially trained technicians must in the main have been inadequate and not in the interests of Service patients. Such a state of affairs is certain in these postwar days to have unpleasant repercussions in promoting an era of unqualified practitioners.

Interest in and increased knowledge of the many and varied methods of treatment by physical medicine technics have undoubtedly been accelerated by the two wars referred to, but in spite of this the organization of physical medicine still leaves much to be desired. Progress in the past for many reasons has been disappointingly slow, but recently more hopeful developments have taken place. For instance it is now becoming increasingly realized that there is here a problem for solution not only by medical men but by politicians as well. It is the duty of the medical profession to set up an efficient organization to control physical medicine, to see that it takes its proper place in modern medicine in relation to the usual surgical and medical procedures and to prevent its exploitation by irregular practitioners. But it is the duty of the politicians to provide the funds and facilities to ensure that all workers may have the benefit of the latest scientific methods of treatment, not only in cases of advanced and deeply rooted disease but in the less serious cases of minor injuries and early rheumatic disease of joints and muscles. With regard to the latter, if adequate treatment by physical methods

in the early stages is applied, incapacity will almost certainly be prevented and also loss of many working hours in the later stages.

Many and varied are the views held today by physiotherapists with regard to the future of their specialty, in spite of the fact that great progress in knowledge has been made within recent years. This is mainly due to the fact that student facilities for study are seriously inadequate and almost entirely dependent on the inclination of the student for studying the subjects. In consequence most practitioners in physical medicine are self taught, and the facilities for teaching and trained supervision have not kept pace with the demands. When the medical student after taking his degree embarks on his career as a general practitioner, his lack of training causes him to discover that many of his patients have realized better than he has the potentialities of physical medicine and that he has started his professional life with indifferent knowledge of its fundamental principles and their general application to injuries and disease. This lack of knowledge by general practitioners has contributed greatly to the slow progress made by physical medicine and to the attitude of the medical profession generally toward the subject. As the practitioner finds that the demand by his patients for treatment by electricity and so on is insistent and that it is too late for him to take more than a passing interest in the subject, he is forced to agree when his patient demands to be allowed to go to a practitioner of his own choosing and without regard to any professional qualifications. He is disinclined to admit that through lack of knowledge he is incapable of prescribing the right form of treatment or, even more important, of supervising it. This acquiescence is obviously unsatisfactory both to the physician and to his patient, and inevitably leads to the treatment of a certain number of patients by unqualified practitioners. So the quack, because of the physician's acquiescence, improves his own status in the eyes of patients by claiming that he has patients sent to him by physicians, thus implying that he has special and recognized qualifications.

Further impediment to progress is the fact that many patients are not sent to the specialist in physical medicine until they have had a lengthy trial of other methods which have failed; this delay involves unnecessary suffering and many lost hours of work. The gap between lack of knowledge and improved knowledge which will enable the general practitioner to realize the benefits of physical medicine can only be bridged by teaching every student the general principles of physical medicine so that he may be, because of this basic knowledge, eager and willing to advise his patients at the earliest possible moment on the type of treatment necessary and where to go to have it adequately and safely carried out. If such cooperation between general practitioner, patient and physical medicine specialist could be organized, many of the difficulties facing physical medicine would quickly disappear, to the great advantage of the general public and the medical profession alike.

Until the medical student is given the opportunity, during his training, of learning the principles of treatment by physical methods (not the advanced education of the qualified physical medicine specialist), when he goes into general practice he will inevitably discover that the registered physiotherapist, in possession of the diploma referred to, has a far greater knowledge of principles, methods and apparatus than he has. He will thus be tempted to cloak his ignorance at the expense of his patients by taking little interest in the subject.

In recent years many hospitals have installed physical medicine departments and this is a great step in the right direction. Unfortunately, however, complete coordination between the physician in charge of such depart-

ments and the heads of other departments has been absent, because the principle that every physical medicine department should be under the supervision of a physician with specialist knowledge has not been generally acknowledged. A department of physical medicine with its qualified physician in charge and its qualified technicians gives ancillary service to all branches of medicine for diagnosis and treatment, and it should be an autonomous unit and not dependent on other departments. If the principle were accepted that all hospitals and other institutions should offer a full staff appointment to the physician in charge of the physical medicine department, with the heads of other departments giving him full cooperation, then and only then would it be possible to organize physical medicine departments in hospitals on successful lines; and this would soon act as a stimulus to the younger men to take up the full study and practice of physical medicine in all its branches.

Since the war the working of the Emergency Medical Service has given many opportunities in the hospitals for the right type of cooperation between specialists in physical medicine and their medical and surgical colleagues on such a scale as to do much to establish physical medicine in the professional view as a useful and essential branch of medicine and to give to all who have fought the uphill battle of physical medicine the recognition which is their due.

If heads of physical medicine departments are to be relegated again to subordinate positions, full cooperation will be impossible, to the detriment of all concerned; great opportunities for increasing clinical knowledge will thus be lost.

The profession generally must realize that there is an enormous and steadily growing public demand for treatment by modern methods of physical medicine and that in the future of medicine lack of knowledge of physical methods will be a distinct disadvantage to the general practitioner and specialist alike, and will undoubtedly encourage the public to seek treatment from the ever growing body of unqualified.

It must be remembered that many forms of treatment in the practice of medicine also lend themselves to exploitation by the unqualified, and as there is little or no control over unqualified practice and as the general public does not fully understand the necessity for supervision by those with special knowledge, the layman is easily hoodwinked by the charlatan. It is, therefore, only by close cooperation between the general practitioners, specialists in physical medicine and specialists in all other branches of medicine that physical medicine can be organized and protected and its practice placed in its true perspective to general medicine.

That a great danger exists in treatment given by unqualified practitioners and even unsupervised treatment by duly qualified technicians is obvious when it is realized that the physician-in-charge has to see that the physical therapy treatments prove adequate by giving detailed instructions to the technician and observing whether or not they are being effectively carried out, and that revision of the directions or methods of treatment is carefully considered during the progress of treatment.

He must fully understand the diseased condition to be dealt with and the best and safest methods of application of the energy to be used, and he must have a clear conception of what is expected as an end result; all this depends on his knowledge of how the particular agent acts and of the envisaged tissue reaction. The physician in physical medicine must also be cognizant of the physiologic and physical effects, what pathologic changes require physical therapy, its contraindications, possible dangers, wrong meth-

ods of application and any special sensitivity of individual patients. Thus a high standard of clinical knowledge, in addition to a sound practical knowledge of the physical principles involved, is essential for the effective and scientific application of physical medicine.

Rehabilitation, which has been so much before the public eye owing to its rapid growth in the recent war, is as dependent on physical methods as on orthopedics, psychiatry, plastic surgery and all other branches of medicine. Rehabilitation is the end result of any form of treatment, and it is not, as so many of the public have been led to believe, a new method of treatment which has suddenly been developed.

Recently the Department of Health for Scotland published a report by its Medical Advisory Committee on chronic rheumatic disease. In this important report a point in physical therapy is stressed, namely, the need as early as possible to replace passive treatment by active exercises. In recent years, since the advent of that much used and misinterpreted word "rehabilitation," it has become the custom of some of its advocates to stress the point that active movements are more useful than all the other so-called passive movements in the armamentarium of physical medicine, and many even advocate exercises to the exclusion of all other forms of treatment. I wish to emphasize that this swing of the pendulum is clearly to be regretted; those who so emphatically affirm this principle to the exclusion of all other forms of treatment generally do not realize, from lack of personal experience, how much can be done, particularly in orthopedic and rheumatic cases by well planned physical medicine before the time arises for instituting the more active methods.

To those who advocate active movements only, I would point out what appears to be forgotten in this new trend of ideas of treatment, or perhaps is not known by all, namely, that all who devote themselves to the treatment of injuries by physical methods use such methods as a preliminary only to instituting active procedures when the time arrives. It is a firm and well established technic to encourage all patients being treated by what are usually described as passive methods to start active voluntary movements as soon as possible.

Further, it seems to be believed that all physical methods are passive. This is in fact far from being the case, as is easily proved by watching the movements of muscles under a special form of electrical stimulation. The movements produced, although accompanied by all the physico-chemical changes due to muscular contraction and relaxation, although not voluntary, are decidedly active, and such movements can by the right technic be reproduced under perfect control of the operator when the patient is quite unable to use the muscles to their full capacity in a voluntary manner. Routine prolonged perfunctory treatment, which is so common at many physical medicine centers, is without doubt one of the main causes for bringing physical methods into disrepute and is to be condemned from all points of view.

Overcrowding of the department is not an adequate reason for not giving the right amount of time and the right type of treatment to every patient. To give the easiest form of treatment, or one which requires less supervision, or to reduce the time of treatment is not in the best interests of the patient, causes a great waste of time of the physiotherapist and cannot possibly give the quickest end result, it is manifestly unfair when one remembers that most hospital patients today contribute financially to their treatment.

What then is the answer to the overcrowded departments? Obviously there can be only one answer. No department should be compelled to undertake the treatment of more patients than its capacity in accommodation,

apparatus and personnel can cope with, and if the demand for physical medicine treatment is reaching such proportions that existing accommodations are insufficient, then more accommodations must be found for physical medicine centers and more personnel must be trained. Now appears to be the time when the attention of the government, which is arranging for a new national health service, must be called to this very important question, and all assistance must be given to the government to work out an adequate plan for the future.

Two outstanding events which will do much to put the practice of physical medicine on a sound basis with the more conservative members of the medical profession are the recent formation of the British Association of Physical Medicine and the establishment of a diploma in physical medicine the examination for which is conducted by representative bodies. Both events will rapidly have far reaching effects on the organization and practice of physical medicine. The diploma will do much to establish the status of specialists in physical medicine, and the British Association of Physical Medicine, with its council of twenty members who are experts in all branches of physical medicine, constitutes a powerful source of advice which the government could utilize in the organization of any scheme for the social and political development of workmen's compensation, on a wider scope than at present, to which they are committed. Under the present system no attempt is made to link compensation with medical treatment, which should be an integral part of workmen's compensation in the future.

When a general practitioner, therefore, considers that his patient requires special physical therapy, he has no alternative but to send him to a hospital or give him some other treatment which he may consider less effective. The truth must be faced that present day hospital departments in the majority of cases, owing to bad accommodation and shortage of staff, cannot consider coping with the enormous numbers of industrial casualties which should have early physical therapy to prevent the more serious later-in-life sequelae which in a large number of cases follow even minor injuries, particularly to muscles and joints. Such sequelae, which are responsible for much crippling, would almost certainly be prevented if facilities existed for early adequate treatment, and many lost hours of work would be saved by quick rehabilitation.

Many hospital physical medicine departments are badly in need of reconstruction, as it has been one of the tragedies in the advance of physical medicine that its departments have so often been relegated to the very bowels of the hospital and in nearly every case have outgrown their accommodation. The story is one of constant effort against inadequate and makeshift premises, and the uphill work done has been a great tribute to the enthusiasts who have carried on under such difficult conditions.

The enormous and steadily growing public demand for physical therapy in hospitals has strained the capacity of departments to such an extent that effective treatment has been partially neutralized by the enforced attempt to increase the capacity of the department by cutting down the time for each treatment, limiting the number of treatments to two or three per week, or giving an alternative form of treatment not requiring so much individual attention by the technician. Should such procedure ultimately have a successful result, then it is a fair assumption that if the treatment had been more intensive the time of cure would have been much less and many lost work hours would have been saved. If the treatment does not end in cure because of the limitation of or of giving alternative treatment, then it is questionable whether the method is fair to the patient, because of the pro-

longed time the ineffective treatment keeps him away from his work, with corresponding loss of earning power.

It is obvious that in any future schemes for improved medical service, physical medicine departments must be greatly enlarged and brought up to date and the number must be substantially increased; an intensive drive to train more medical specialists and technicians must also be organized.

Much that has been written and said about the uphill fight of physical medicine in Britain and the medical outlook generally regarding it might well have applied to the conditions in America until recently. The whole effort in the United States has been radically changed, mainly owing to three factors: (1) the large money grant made to organize physical medicine by Mr. Bernard Baruch, (2) the magnificent work carried out by the committee of experts which, as a result, was formed to inquire into the whole question and (3) the large number of medical schools showing vision in establishing teaching centers in physical medicine on a scale that dwarfs similar efforts in Great Britain. The committee in a comprehensive report recommended amongst other details the establishment of teaching and research centers in physical medicine at medical schools, the establishment of fellowships and residencies in physical medicine, improvement in the existing teaching programs in schools and, above all, the organization of a central office with staff to serve as a supportive mechanism to promote and coordinate research in physical medicine, to distribute funds and to form an advisory board of experts.

In addition it has appointed many subcommittees to report on every branch of physical medicine.

Such a tremendous scheme will, without doubt, open up a future for physical medicine in the United States which cannot even be visualized in Britain in the absence of similar financial backing, and it will be interesting in the course of time to see how efficient such an example of private enterprise will become.

If a plan is developed on the scale outlined, it is reasonable to presume that proper recognition for wider use of physical medicine will be achieved and that the eventual results in placing physical medicine on an assured scientific basis will be of untold benefit to the community.

In spite of the "Crippsian" austerity that is today chloroforming British effort, some one may yet give a generous grant of money similar to that made by Mr. Bernard Baruch, and such a happy event would do much to encourage the organization of physical medicine in Great Britain, as it has done in the United States, and it would undoubtedly hasten progress by many years.

With the British government pledged to a great increase in the facilities for medical and surgical treatment for the industrial worker, it must be apparent that a great opportunity for obtaining the best advantage of physical medicine and all it entails will be lost if it is not recognized now on what a huge scale facilities must be organized. If the workers of all classes are to have the advantage of the most modern methods of physical medicine, such treatment must be of necessity be institutional. Well organized and controlled industrial clinics would supply the needs outside hospital departments, and the Council of the British Association of Physical Medicine is the most expert existing body to advise the government on the whole question. Physical medicine is the treatment of the future in a large majority of cases and is taken advantage of by almost every other department of general medicine and surgery. Now is the time for the government to seize the opportunity to obtain the best advice for a comprehensive national scheme, and to realize

that physical medicine must in future have a greater part to play in the treatment of industrial workers. It is imperative that its organization and control should be undertaken with vision and vigor if the growing necessity for such treatment for the insured and sick workman is to meet the huge demand under the best and safest conditions.

In a recent speech the British prime minister stated:

We seek a service which will be comprehensive in the double sense of being available to every member of the population and of covering every form of medical and allied activity. We intend to have a service in which no patient shall be without the treatment he needs through lack of money or through deficiency in or lack of organization of the necessary facilities. We need, too, a service in which professional men and women will be able to devote themselves to their great calling without financial anxiety and without in any way feeling cramped and over-controlled by regulations.

If this forecast should prove to be true then physical medicine will have its greatest opportunity to become a very important part of any national health service of the future.

21 Grosvenor Square.

BENJAMIN RUSH AND PHYSICAL MEDICINE

HOWARD CARTER, M.E.

and

JOHN S. COULTER, M.D.

CHICAGO

Dec. 24, 1945, marked the two hundredth anniversary of the birth of Benjamin Rush. He was born at Byberry, near Philadelphia, in 1745 and died April 16, 1813. He was one of America's first great physicians and one of the early users of physical medicine. He was graduated from Princeton in 1760 and received the degree of doctor of medicine from the University of Edinburgh in 1768. He became professor of chemistry at the College of Philadelphia in 1769. This college, founded in 1765, later was merged into the University of Pennsylvania.

Dr. Rush was active in the prerevolutionary movement. As a member of the provincial conference of 1776 he moved the resolution declaring the expediency of a declaration of independence, of which he was a signer the following month. He was a surgeon in the Pennsylvania Navy in 1775-76 and was appointed surgeon general in 1777 and later physician general of the hospitals of the middle section.

In 1778 he resigned and resumed his practice and professorship at Philadelphia. He was a member of the convention which formed the Constitution in 1780. Dr. Rush established the first dispensary in the United States in 1785 and in 1787 was a member of the convention which ratified the Federal Constitution. He became professor of theory and practice of medicine in 1789. After the merging of the College of Philadelphia into the University of Pennsylvania in 1789, he was appointed professor of the institutes of medicine and clinical practice, thus becoming the first professor of medicine at the first medical school in the Colonies.

Benjamin Rush, the "American Sydenham" (Lettsom) was, according to Welch, "the greatest historical figure in American medicine." He de-

scribed the Philadelphia epidemic of yellow fever (1793) most accurately and noted that mosquitoes were particularly numerous in times of epidemics. He instituted a new method of treatment with noticeable success, visiting from 100 to 120 patients daily. He described dengue independently in 1780, although Bylon gave the original description in 1779. He advised the extraction of decayed teeth for the relief of dyspepsia, rheumatism of the hip joint and epilepsy. Interesting case reports were published in his "Medical Inquiries and Observations" under the title "An Account of the Cure of Several Diseases by the Extraction of Decayed Teeth." He was one of the founders of the Philadelphia College of Physicians in 1787. He advocated preventive medicine and introduced a code of medical ethics, antedating Thomas Percival of Manchester, England, considered the "father of a system of medical ethics."¹ He was one of the founders of the Dickson College, and an advocate of the abolition of slavery. He was connected with various religious and scientific societies, and was treasurer of the United States Mint from 1799 until his death. Dr. Rush wrote "Medical Inquiries and Observations," five volumes (1789-98) and "Essays, Literary Moral and Philosophical" (1798).

The influence of Sydenham's views on exercise can be found in the publication in 1869 by Rush of "The Works of Thomas Sydenham with Notes Intended to Accommodate Them to the Present States of Medicine and to the Climate and Diseases of the United States." Speaking of a bilious colic he said:

I had compassion on the man laboring under low circumstances and a violent disease, and lent him a horse to ride a long journey, as above directed, and after riding a few days, his bowels became so strong as to be able to expel the remains of the disease, and he recovered perfectly by this means without the assistance of opiates. And to speak the truth upon this occasion, I have always known this kind of exercise used with success not only in this case but in most chronic diseases, provided it were resolutely persisted in. For if we consider that the lower belly, wherein all the secretory organs are seated is greatly shook by this exercise, perhaps some thousand times a day, we shall readily believe that they are hereby enabled to shake off any gross size tumors fixed therein, and (which is still more material) so strengthened by this powerful rousing of the natural heat as to be able to perform the function of purifying the blood.

We now call it occupational therapy, but on Sept. 24, 1810, Dr. Rush in a letter to the Board of Managers of the Pennsylvania Hospital recommended:

That certain kinds of labor, exercise, and amusements be contrived for them, which shall act at the same time upon their bodies and minds. The advantages of labor have been evinced in foreign hospitals as well as our own in a greater number of recoveries taking place among that class of people who are employed in the ordinary work of the hospital than in persons elevated by their rank in life above the obligations or necessity of labor. Exercise and amusements should be the substitutes for labor in such persons. The amusements should be swinging see-saw, riding a hobby horse, or in what are called flying coaches, playing at chess and checkers, listening to the music of a flute or violin, and in making short excursions into the city or country. Perhaps kinds of labor might be discovered for every class of mad people, of such a nature as to afford a small addition to the funds of the hospitals.

That an intelligent man or woman be employed to attend the different sexes, whose business shall be to direct and share in their amusements and to divert their minds by conversation, reading, and obliging them to read and write upon subjects suggested from time to time by the attending physician.

In 1794 Rush used broken ice in a bladder applied to the head of fever patients and used cold water in the treatment of rheumatism, gout, measles

1. Editorial, J. A. M. A. 120:1170 (Dec. 22) 1945.

and yellow fever. In 1801 his pupil Henry Wilson Lockette published "An Inaugural Dissertation on the Warm Bath," presented to the trustees of the medical faculty of the University of Pennsylvania for the degree of doctor of medicine. He made careful observations of the effects of baths of different duration at varying temperatures.

ACTINIC CANCER *

The relation between actinic injury and carcinogenesis resulting from a therapeutic, occupational, environmental or experimental exposure to radiating energy has been in recent years the subject of several comprehensive monographic presentations.¹ The scientific importance of this problem has been enhanced by knowledge of two hazards connected with the use of atomic energy and artificially radioactive isotopes.

Lacassagne² has recently reviewed this subject in two volumes dealing with cancers following electromagnetic (roentgen rays, gamma rays, solar and ultraviolet rays) and corpuscular (alpha rays, beta rays) radiation. He concludes that the cancerigenic action of certain radiations (roentgen rays, rays from radioactive substances, ultraviolet rays) is not the result of a chemical substance set free in the irradiated tissue under the influence of the rays but more likely a direct effect of the exposure to actinic energy of certain cellular formations controlling cell division. The diversity of rays capable of exerting a carcinogenic effect is more apparent than real. All cancerigenic rays provoke a reaction in the cells through an impact of energy compatible with survival and proliferation. While the cancerigenic radiations are the same as those capable of producing cellular mutations, Lacassagne does not believe that an accidental radiomutation is the cause of cancer. He points out that alpha rays have never been shown, experimentally and clinically, to cause cancer. Gamma rays by themselves do not seem to exert such action, as therapeutic radiation cancers originate at the periphery of the necrotic cylinder surrounding the applicator, i. e. at a site where the beta rays exhaust their energy and which is passed by the gamma rays. Moreover, chromosomic or somatic cell mutations become manifest within a relatively short time after the action of the causative agent, while radiation cancers always show a long latency period of months' or years' duration after the cessation of their radiation. Lacassagne questions whether a radiomutation affecting the mechanism of cell division can remain quiescent for such a long time. He suggests, therefore, that the long latency period is more plausibly explained by a cancerigenic mechanism necessitating the action of repeated minute radiolesions affecting the cellular structure which controls cell division. This ultimately causes a mutation through the development of molecular changes in the sensitive zone after the absorption of small quanta of energy. The final step in this process may be catalyzed by nonspecific factors, such as trauma and inflammation. Lacassagne main-

* Reprinted J. A. M. A. 130:1163 (April 20) 1946.

1. Warren, Shields: Effects of Radiation on Normal Tissues, Arch. Path. 34:443 (Aug.), 562 (Sept.), 749 (Oct.), 917 (Nov.), 1070 (Dec.) 1942, 35:121 (Jan.) 304 (Feb.) 1943. Henshaw, P. S.: Implications from Studies with Physical Carcinogens, J. Nat. Cancer Inst. 5:419 (June) 1945. Hueper, W. C.: Occupational Tumors and Allied Diseases, Springfield, Ill., Charles C. Thomas, 1942, p. 896.

2. Lacassagne, A.: Les cancers produits par les rayonnements electromagnetiques, Paris, Hermann & Co., 1945, p. 137; Les cancers produits par les rayonnements corpusculaires, Paris, Hermann & Co., 1946, p. 102.

tains that this concept of radiocancerigenesis is supported by observations made in the production of cancers by specific chemicals and thus possibly might be applicable also to chemocancerigenesis.

These concepts are in general harmony with the hypothesis of Henshaw, who considers carcinogenesis the result of a gradualistic tangential differentiation, and with those of Hueper, who advances similar arguments against the supposition of cancer formation by direct radiomutation. Hueper emphasizes the gradual process of cancerization in his theory of allergic mutation. It is moreover, a well established experimental fact that the mild action of physical and chemical carcinogens may produce benign neoplastic proliferations (warts, papillomas, adenomas) which on continued exposure may become cancerous or may be followed by the development of primary cancer.

While discounting age as a significant cancerigenic factor, Lacassagne asserts that the difference in the length of the latency period is in part controlled by the intensity of the exposure to a carcinogenic agent and in part dependent on the relative metabolic activity of the species, as it is inversely proportional to the size of the animal. The general validity of the last part of this statement is open to question in view of the obvious refractoriness of some species to certain cancerigenic agents (monkeys to tar; rabbits to ultraviolet rays).

According to Lacassagne's calculations, the quantum energy needed for the production of cancer is approximately the same for roentgen rays (28×10^7 ergs per square centimeter, by 60 kilovolts) and for ultraviolet rays (30×10^7 ergs per square centimeter), while only 1.5×10^7 ergs per square centimeter of absorbed energy of beta rays have such an effect. The carcinogenic dose of corpuscular radiation is still undetermined.

Lacassagne notes that the amount of energy carried by thermic rays is apparently too weak to elicit any fundamental disturbances in the molecular and atomic structures of the cellular constituents inducive to cancer formation and that reliable clinical and experimental evidence does not exist supporting such an action. Hueper, who comes to a similar conclusion, suggests therefore that the development of cancers in old burn scars might be due to the inclusion of incomplete combustion products in the scar tissue.



A REPORT ON THE PROGRAM OF TRAINING AND RESEARCH IN PHYSICS AND TECHNOLOGY CONDUCTED AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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The second program of training and research in physics and technology was conducted at the Massachusetts Institute of Technology, Cambridge, Mass., from July 16, 1945, to Sept. 30, 1945. The enrollment consisted of four men approved by the Baruch Committee on Physical Medicine: Dr. W. E. Selle, professor of physiology, University of Texas; Dr. Charles Wise, Baruch Fellow, Harvard University; Major A. B. C. Knudson, Veterans Administration, and the author.

All appointees were accepted by the Massachusetts Institute of Technology and listed as Baruch Fellows in the records. No academic grades or credits were issued by the Institute.

The course was presented in the Baruch Laboratory and other laboratories associated with the Department of Biology and Biological Engineering of the Massachusetts Institute of Technology. Lectures were given by members of the staff at the Institute and were supplemented by recitation periods and demonstration which permitted full discussion of practical questions and problems.

The purpose of the program was: (1) to provide specialized and highly concentrated training in the physics and technology of the methods and equipment employed in the practice of physical medicine and in research in this field; (2) to stimulate selected Fellows to undertake investigations of limited scope along physical lines in the field of their particular interests; (3) to inform Fellows of the most efficient method of obtaining information from the literature, prominent authorities and industrial organizations concerning technical problems they are likely to encounter in their future careers in physical medicine, and (4) to inform Fellows of the literature and references and to permit them to make a central card index of the research methods and instruments available in this field.

Lectures

Forty-four didactic lectures of one and a half hours each were given by Dr. Kurt Lion and four lectures by Dr. F. O. Schmitt. In addition, one lecture each was given by Dr. Irving W. Sizer on latest theories on enzymes, by Dr. Bernard S. Gould on some problems in physiologic chemistry, by Dr. George R. Harrison on spectroscopy, by Mr. Cecil E. Hall on the electron microscope, by Mr. Richard Cloud on supervoltage roentgen rays and by Mr. David F. Waugh on brownian movement. An outline of the lectures by Dr. Lion and Dr. Schmitt follows.

I. *Dr. Lion's Lectures.* — A. Introduction to the course: The aims of the course were reviewed and the methods to be used in fulfilling these aims were presented. After an orientation which dealt primarily with the correlation of physics, biology, biophysics, medicine and biological engineering,

the plan of the course was laid down. Physical medicine, which in its most successful form as a medical art has been developed in a rather empirical way, needs a scientific foundation. This requires two things: first theoretical understanding of the physical and physiologic processes in the organism, and second, experimental methods and means of studying these processes and the phenomena involved. Such a development will lead to a quantitative presentation which is the basis for the advancement of any science, but which will also lead to new clinical applications and to better diagnostic and therapeutic methods and instruments.

B. Fundamentals of electricity:

1. Molecular and atomic structure of matter.
2. Early history of electricity.
3. Electron theory of electricity.
4. Fundamental laws and their applications.
5. Methods of producing electricity.
6. Terminology and symbols used in electricity.

This was one of the most interesting of the many interesting series of lectures given by Dr. Lion. A review of the molecular and atomic structure of matter was of great assistance in our attempt to comprehend the nature of electrons, protons and neutrons. The history of electricity was fascinating. It gave the group an idea of the great advancements that have been made in electrical science from the early work of Volta, Galvani and Edison. Through the use of demonstration models, mathematical equations and formulas, Dr. Lion succeeded in teaching the fundamental laws of electricity and their application in solution of problems concerning voltage, current, resistance, impedance and inductance. This series of lectures did much to clarify such terms as galvanic, faradic, alternating and direct currents.

C. General circuits:

1. Theory and principles of electrical circuits.
2. Methods of producing electrical circuits.
3. Types and variations in circuits.
4. Standard commercial circuits.
5. Resistance.
6. Surface and volume resistance.
7. Skin and tissue resistance.
8. Inductance and capacitance.
9. Dielectric constants.
10. Network filters.
11. Measurements of alternating and direct current.

The theory and fundamental principles of many simple and complex circuits were described. The human body was described as a network of resistance and capacitance. It was pointed out that there is need for much research concerning skin resistance, surface resistance, dielectric constants and other factors which govern the flow of electricity in the human body. Through a better understanding of these factors, the science of instrumentation will continue to improve and new instruments will be devised to aid man in the conquest of the unknown.

D. Electron tubes:

1. Review of the electron theory.
2. Methods of producing a flow of electrons.
3. Early history of the electron tube.
4. Function of the diode, triode, tetrode and pentode.
5. Applications of the electron tube: (a) rectifiers; (b) amplifiers; electrocardiographs, electroencephalographs; (c) cathode ray tubes, oscillographs,

devices for investigating nerve action potentials; (d) trigger circuits, stimulators, impulse generators; (e) roentgen rays, high velocity particles.

6. Future of the electron tube.

The electron tube, which is a marvelous device, was described. It has made possible the great progress in electronics and instrumentation because it controls the flight of millions of electrons with a minimum of energy. Future possibilities of the electron tube are but dimly foreseen, for each development opens new fields of application and speculation.

E. High frequency and short waves:

1. Review of alternating currents.
2. Condenser discharge.
3. Oscillating circuits.
4. Oscillators.
5. Commercial diathermy and short wave machines.
6. Effects of short waves.
7. Short wave measurements and dosimetry.
8. Radiation and electromagnetic waves.

It was shown that alternating currents at frequencies above several million cycles per second do not have any effect of direct electric stimulation, but act primarily through the development of heat within the body. There are two methods of application. — dielectric heating and induction heating. These have different effects according to the dielectric properties of the different tissues. The geometrical distribution of energy can be measured. In addition to the technics used at present, a new one is being developed which makes use of the radiation of electromagnetic waves at very high frequencies and which permits, to a certain extent, focussing toward organs inside the body.

F. Radiation and optics:

1. Dimensions and units.
2. Spectral properties of light.
3. Ultraviolet, visible and infra-red sources.
4. Commercial equipment.
5. Physiology of vision.
6. Photoelectric cells, constructions and uses.
7. Photometric measurements; dosimetry.

This series of lectures dealt with light as a form of radiant energy and with the physical and physiologic properties of radiation in the different wavelength ranges of the spectrum. Besides roentgen rays, the ultraviolet range from 20 to 400 millimicrons ($m\mu$), the range of visible light from 400 to 750 $m\mu$ and the infra-red radiation from 750 to about 15,000 $m\mu$ are of particular medical interest. The technics used to produce, measure and analyze these different radiations and their interaction with matter were discussed.

G. Acoustics:

1. Physics of sound.
2. Elements and dimensions.
3. Tone combinations, harmonics.
4. Hearing.
5. Sound sources and instruments.
6. Sound measurements.
7. Supersonics.

The medical importance of acoustics does not lie only in the field of otology and in the application to hearing aids. Sound, in general, is vibration and as such is or will be of great importance for diagnosis (for example, percussion, heart sound), as an environmental factor (noise damage) and in

therapy (supersonic treatment). The physics of sound as well as the prominent acoustic experimental methods and instruments were discussed from this point of view.

H. Roentgen rays and radioactivity:

1. Generation of roentgen rays.
2. X-ray tubes and machines.
3. Commercial installations.
4. Physical and physiologic properties of roentgen rays.
5. Dosimetry of roentgen rays.
6. Radioactivity.
7. Geiger counters and radioactive measurements.

Roentgen rays and radioactivity were introduced primarily as medical research tools. The technics of these methods, the production and measurement of roentgen rays and the interaction of such rays with matter and with living cells were discussed. Newer methods permit production of roentgen rays of several million volts. The thus originated radiation is highly penetrating and permits new uses of these rays not only in research but for clinical work. The technic of radioactive measurement is of steadily growing importance, primarily in tracer methods, where it serves to follow the migration of "labeled molecules" through the body.

II. *Dr. Schmitt's Lectures.* —

- A. Neuroanatomy; latest concepts and theories of nerve structure.
- B. Electrical properties of a nerve.
- C. Histology and physiology of muscle.
- D. Nerve action potentials.

Each of Dr. Schmitt's four lectures was well presented and highly appreciated. Through his lectures we were brought up to date on theories concerning nerve and muscle physiology. Electronics has contributed much to this field of research.

Laboratory Assignments

Approximately 60 per cent of the time was spent in the Baruch Laboratory working on well planned projects and experiments. An attempt was made to correlate the laboratory work with the lectures of the day. The work in the laboratory was supervised by Dr. Lion and his assistant, Mr. Frank Giori, a graduate electrical engineer.

The following projects were completed by the group:

1. Construction of models of simple wiring diagrams.
2. Examination of various types of voltage sources.
3. Internal resistance and its influence on measuring technics.
4. Studies of the thermal action of electric currents.
5. Electrometric measurements.
6. Hygrometry by mechanical and electrical means.
7. Thermometry, electric thermometry, thermoregulators.
8. Nonlinear circuit elements.
9. Measurement of specific heat by electrical means.
10. Determination of dielectric constants.
11. Determination of the characteristics of a diode, triode, tetrode, pentode and other multi-electrode tubes.
12. Construction of a resistance coupled amplifier.
13. Construction of a transformer coupled amplifier.
14. Construction of a vacuum tube voltmeter.
15. Construction and investigation of semicommercial bridges.
16. Construction of a vacuum tube oscillator.

17. Measurement of high frequency voltage and current.
18. Measurement of power output of diathermy machines.
19. High frequency impedance measurements.
20. Assembly and operation of a laboratory diathermy machine.
21. Construction of a trigger circuit.
22. Noise measurements.
23. Experiments with cathode ray tubes.
24. Experiments with a Geiger counter and radium.

Demonstrations

Throughout the course demonstrations were given as follows:

1. The electron microscope.
2. The Geiger counter.
3. The supervoltage roentgen ray machine.
4. Spectroscopic methods.
5. Nerve action potentials with a cathode ray oscillograph.
6. Brownian motion.
7. Direct tracing electrocardiographs.
8. Radar equipment.
9. Commercial diathermy and short wave diathermy machines.

Excursions

Another instructive part of the course comprised excursions to the following places:

1. All departments in the Massachusetts Institute of Technology that were open for inspection.
2. General Radio Corporation.
3. Polaroid Company.
4. Department of Physiology, Harvard Medical School.
5. Department of Physical Medicine, Massachusetts General Hospital.
6. Marine Biological Institute at Wood's Hole.
7. Spectroscopy laboratories.
8. High voltage roentgen ray laboratories.
9. Sanborn Company.

Dinner Meetings

Three evening sessions were held in one of the hotels in Boston, at which we had the opportunity of meeting some of the outstanding men in the fields of medicine, engineering, physiology and biophysics. Round table discussions of medical and experimental problems made these dinners very enjoyable.

Comment

The program of training and research in physics and technology conducted at the Massachusetts Institute of Technology is a well organized program. It stimulates research in the field of physical medicine and, above all, provides training for a group of physicians who will be able to evaluate old and new methods and instruments being used in physical medicine. Through such scientific evaluation physical medicine will attain the high standard it merits.

TECHNOLOGY AND MEDICINE *

Modern Physical Technological Methods Initiate New Directions of Medical Research, Develop Better Instruments for Diagnosis and Therapy, and Open Up New Careers

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Hardly any other field of science is as misunderstood by the general public as that of medical research. Excessive dramatization is partly responsible for several popular misconceptions. Most common of these ideas is that the predominant number of advances in medicine begin with a man, sitting at a sick bed, utterly shaken by the effects of an incurable disease. Suddenly he has a new idea. He makes a few experiments, preferably on himself, which are successful. At first, no one believes in his work, but finally he is recognized and cures thousands of people.

Medical research does not follow such a course. Nor does a medical research center suddenly flourish into full bloom after a chance meeting has brought together a physician, a chemist, a physicist, and an organizer who become united in their humanitarian collaboration by a burning desire to relieve the sufferings of humanity.

For the past 20 or 30 years chemistry has played an important role in medicine, whereas the participation of physics has been relatively limited. This condition is easily understandable. With the exploration of the chemical composition of and processes occurring within the body, a number of specifically acting compounds was found which could be used therapeutically. Not so in physics. The physical phenomena and forms of energy—particularly those employed in physical medicine—are mostly nonspecific, at least in the way in which they were used in the past. Another reason for the relatively small influence of physical sciences in medicine is simply that physics is too difficult. The physical phenomena in biology and medicine are for the most part so complicated that they have not yet been explored. The whole arsenal of physical research, from quantum theory to the technic of instruments of the highest sensitivity, is needed to investigate these problems. Without these powerful tools, any research in the biophysical field was formerly rather hopeless.

Already we have reached the point where a change of decided importance can be observed. The theoretical and technical means of this research are now available. The interest in, and therefore the number of articles and books about subjects in physical medicine, biophysics, and medical physics has considerably increased of late. The war has stimulated important research in physiology as related to physical phenomena. There is much evidence of the desire to make the results of recent physical and technological investigations available for the service of biology, medicine, or public health. This tendency is manifested in the fields of electronics and instrumentation, in transportation engineering and air conditioning, in nuclear physics and, quite significantly, theoretical physics.

The introduction of physical and technological research into the medical field is very promising. Formerly, medicine had been developed on a highly empirical basis. Medical men were concerned merely with the over-all ef-

* Reprinted from *Technology Rev.* 40, Feb., 1946.

fects produced; a living organism such as a guinea pig would be treated in a specified manner, and the gross results of the treatment would be observed. The newer approach involves a quantitative study of the effects of the various physical phenomena acting upon the living organism and investigates step by step the results of these actions. Even though accurate physical measurements cannot yet be made on each and every aspect of the phenomena, the value of the approach is beyond question.

To illustrate this type of research, assume that we wish to study the medical effect of an x-ray treatment, applied to a given location of a tumor at a certain depth in the body. The treatment may be given under a great variety of conditions, using different x-ray generators, tubes, voltages, currents, filters, and distances between the generator and the subject. The biological results of such a treatment will be different in each case. But when we know enough about the absorption and scattering of x-rays in tissues and the effect of wavelengths and other physical magnitudes, we shall be able to predict the dose distribution in the body. Experimental results then become comparable, and the biological and medical results can be correlated with the physical phenomena causing them. At the same time, the number of variables involved diminishes greatly as will the number of opinions and contradictory reports so frequently encountered in medical literature.

The result of any kind of therapy is to be measured by the clinical success and the cure of the disease, of course. The process of healing a disease is, however, a consequence of a given treatment in addition to a great number of physiological and psychological processes. So long as consideration is restricted merely to the treatment and the cure, one does not know whether the patient got better because of, or in spite of, the treatment. In other words, the mere observation of the clinical end result is unsatisfactory because it is incomplete. Only that type of medical research which investigates the action of the treatment step by step will lead to the finding of natural laws which will always be valid and which, in the hands of the physician, will be a valuable guide to him.

This type of research also indicates how medical instruments should be fashioned so that better results may be obtained. For example, research on high-voltage x-rays has shown that it is possible to obtain an increase in x-ray energy in the depth of the body in such a way that the surface layers through which the beam passes are relatively little affected. This knowledge is of greatest importance in the treatment of deep-seated tumors, and the development and production of appropriate equipment for clinical use follows as a logical consequence of such research. This single example is sufficient to show that physical and technological research may brilliantly complement clinical observation in furnishing the guiding principles for supplying medical men with new equipment.

Diagnostic Applications

A great need for research and development may be anticipated in the field of physical diagnostic methods and instruments, and here again technological developments are able to make substantial contributions to medicine. One of the most commonly used instruments in the doctor's office, the stethoscope, belongs in the category of such physical diagnostic tools, and its development illustrates the benefits which modern technology can bring to the medical sciences.

When the stethoscope was first introduced into practical use in 1819 by René Laënnec, it consisted of a rigid hollow tube with enlarged end pieces. In this form it was used for a long time until the stethoscope with flexible tubing and a membrane at one end was developed. Mechanical resonance is employed to some extent in the flexible tubing stethoscope and provides

some amplification over a narrow but useful frequency band. Today, through the use of a microphone and a suitable electronic amplifier, the electronic stethoscope makes possible the reproduction of the sounds of heartbeats for large audiences. At the same time, the instrument is able to record all aspects of systolic and diastolic contractions or, using filters, to select for special study any range of the frequency components of heartbeats. At present, the electronic stethoscope is used primarily for research, but there are other electronic instruments which have been adopted in standard routine examinations in medical practice.

Research on physical diagnostic methods and the development of instruments required for diagnosis are particularly promising at present through the use of electronic means. The complete lack of inertia in electronic equipment (at least so far as concerns the biological process to be measured), the ability to amplify, and the negligible amount of input power required to control electronic devices are, in part, reasons for the general anticipation of such a development. But biological considerations also contribute good reasons for the adoption of electronic equipment. Of these reasons, one of the foremost is that minute voltages, called action potentials, are produced within the body as a result of biological activity of the heart, brain, or nerves, for example. The amplification, detection, and analysis of these action potentials has opened up new fields of diagnosis which have reached their most advanced developments in the fields of electrocardiography and electroencephalography. Moreover, it has been found that the electrical characteristics of the skin may be used for diagnostic purposes, and here again electronic equipment is called upon to play its important role.

In electrocardiography the action potentials generated in the body as the result of the beating of the heart are obtained from electrodes placed on the arms, legs, or chest of the patient. These minute voltages are then amplified and recorded. A deviation of the recorded curves from the normal pattern indicates a pathological alteration of the heart activity. Since the patterns for different diseases are known, a reliable differential diagnosis is usually possible. It has also been proposed to use these action potentials for therapeutic purposes, as, for example, resuscitation or the treatment of cardiovascular diseases. Pick-up electrodes, from which the action potentials are obtained, are attached to the patient. After suitable amplification these potentials are reapplied to the patient by means of another pair of electrodes. By designing the amplifier for proper phase shift or delay of signals, it may be possible to stimulate the activity of the heart in its own rhythm. In this technic the heart is used as a self-excited oscillator. As yet little is known about the results obtained with this method.

The electrical activity of the brain is recorded by means of the electroencephalograph, which makes possible the diagnosis of certain mental disorders by means of electrical potential measurements on the scalp. The principle of the electroencephalograph is similar to that of the electrocardiograph. The interpretation of the curves, which are naturally much more complex than those of the electrocardiograph, is, however, sometimes difficult. Considering the very complicated processes of the brain activity, we would expect this, but the difficulty is a particular challenge to obtain more and better information by the use of improved equipment. With this method it is now possible to determine the location of a brain tumor (sometimes very important in brain surgery), and it may become feasible to localize or coordinate certain parts of the brain with some mental or physical anomalies. A considerable increase in the sensitivity of the instruments used in electroencephalography is not possible, however. The magnitude of brain action potentials is close to the noise level which it is impossible to overcome.

It is to be expected that further research on electric nerve action potentials in connection with other organs, glands, and so on, will evolve diagnostic methods which are perhaps of even greater importance to general medicine or in psychiatry than the ones we already have. The difficulties are great; what we measure is largely a superimposition of many different electrical signals. Sometimes the development of special experimental technics is required to eliminate those signals which are not desired and to record undistorted the signals characteristic of the process under study. One difficulty here is the lack of a proper explanation of the fundamental process of propagation of nerve action potentials. The velocity with which an impulse travels along a nerve is of the order of one meter a second. This velocity is too fast for propagation to be achieved by purely chemical means; it is too slow to be the result of a purely electrical phenomenon.

The problem of physical diagnosis is frequently that of getting some information about processes going on inside the body from measurements on the body surface. Besides mechanical, thermal, or optical properties of the skin, its electrical properties can also be used diagnostically. From simple electrical resistance measurements of the skin one can get indications of the activity of the sympathetic nervous system and of emotional reactions of the person under observation. An instrument used for this purpose is known in medicine as a psycho-galvanic reflex meter and has attained wide publicity as the lie detector. It is very likely that this instrument, in the hands of an experienced psychologist, can uncover the deeper cause of many diseases and, perhaps, can open up a new physical experimental approach to psychological and neurological studies which, in the past, have been based solely upon theory.

Therapeutic Applications

Many persons also expect the field of physical therapy to show a development as rapid as that which has taken place in physical diagnosis. The situation with respect to the search for physical means of healing and curing is, however, somewhat different from that of diagnosis. In his popular book about medicine¹ Dr. Carl Binger characterizes research in therapeutics with the words, "Like happiness, a cure is seldom found by searching for it. Some cures are the logical outgrowth of deep scientific understanding, others are stumbled upon by accident and still others have grown out of the ancient experience and wisdom of the race."

Physical medicine, in particular, is the outgrowth of experience. Apparently heat and cold, air and water, and the beneficial influence of the sun's radiation have been used to fight diseases since the earliest times of humanity. The powerful effect of radiation therapy is known to everyone who has used this treatment in too large dosages on the beach; painful sunburn is the vehement reaction of the body. On the other hand, lack of the sun's radiation can cause severe diseases, since the formation of important compounds in the skin is due to photosynthetic processes and requires the presence of radiation of the appropriate wavelength.

The wavelengths of light which are of greatest importance in medicine are located in the ultraviolet portion of the spectrum. In general, three different ranges of ultraviolet radiation may be distinguished. The range of from 315 to 400 millimicrons has the power to penetrate the skin to an appreciable extent and is used in the treatment of some diseases, for instance, lupus. A second range of ultraviolet radiation, between 280 and 315 millimicrons, produces erythema of the human skin and is applied in the treatment of rachitis (rickets). The range of wavelengths shorter than 280 millimicrons has a particular germicidal effect. The primary effect of ultraviolet

1. *The Doctor's Job* (New York: W. W. Norton and Company, Inc., 1945), p. 149.

rays on cells or on proteins is still a difficult problem, especially since it is expected that the energy of a single photon of the radiation must have some relation to the binding energies within the structure of proteins.

Such specific effects are not to be expected in the infrared part of the spectrum. The effect of infrared treatment consists more of superficial heat, which may increase the flow of blood through the capillaries, relax muscle spasms, or produce locally increased metabolism. Frequently one finds the opinion expressed that infrared rays are able to penetrate into the depths of the body, but this is not so. Particularly those lamps used in infrared therapy which operate at low-color temperature (room heaters, for example) produce a radiation of which not more than a fraction of 1 per cent penetrates the skin. The wavelengths shorter than 0.7 microns are absorbed by oxy-hemoglobin, those longer than 1.4 microns by the water content of the tissue. This does not mean, however, that infrared treatments are ineffective, it only localizes the primary effect of these rays.

If heat is to be applied into the deeper regions of the body, the technics of diathermy and short-wave diathermy are more appropriate. Short-wave dielectric and induction heating have been used in medicine for more than a decade and have been employed by industry on a large scale for only a few years. Industrial research in this field has recently been so successful, however, that its results can now be used for medical applications. The development of ultrahigh-frequency equipment during the war will enable us to use electromagnetic waves medically in the range between very short radio waves and infrared waves. Theoretical considerations and actual measurements made on short-wave radiation fields show that, at least to some extent, it is certainly feasible to localize the effects of electromagnetic waves to certain regions inside the body by focusing the waves on the desired area or organ.

Unlike direct-current or low-frequency electric impulses, high frequency voltages and currents do not produce electric shocks. At radio frequencies, several amperes can be sent through the body without any sensation other than that of heat.

But also direct current, direct-current pulses, and low frequencies are used in medicine. Recent research in shock therapy and also in the promising field of electronarcosis demonstrates the possibility of using electrical power of low frequency and various wave forms for specific purposes.

Among the great number of physical agents which are actually or potentially important in medicine, that of climatological environment is very interesting but may be rather problematic in its influence. Different authors report that some diseases, like arthritis and rheumatism, and certain psychological and physiological conditions depend upon the weather. Many people are affected by a change of atmospheric conditions, as, for instance, the arrival of a thunderstorm or a snowstorm, and such effects can be very pronounced, depending upon the geographic location. Since temperature, humidity, and barometric pressure do not appear to be involved in this effect, it has been claimed that the electrical condition of the atmosphere is the important factor. Russian workers report interesting progress in this field, but it seems that additional research is needed to reach definite conclusions. Medically important discoveries may result from further work in this field.

It has been said that physical therapy is a purely psychological treatment. Considering the decisive importance of psychology in medicine, no other statement could be of higher praise to physical therapy. The important question is only whether the effect of treatment with physical agents acts first in the imagination of the patient and from there acts upon his body or whether a physical or chemical change in the organism can be proven to be a direct

consequence of the physical agent. We know today that both effects exist, but we do not know enough about the individual factors and how they interact. Fortunately, the physical and biophysical part of this complicated process is accessible to experimentation and exact measurement, and we may expect much progress from research in this field.

Education

In the future, the complexity of the physical phenomena involved in scientifically oriented investigations in physical medicine will require the services of trained physicists. Many hospitals have already recognized this fact and have added physicists to their staffs. Some have installed biophysical laboratories, analogous to the biochemical laboratories, which have long since proved their value. The tasks of a physicist in such a position are numerous. Besides his own research, often in collaboration with his medical colleagues, he works out plans for treatment in special cases (e. g., deep therapy); he develops physical methods for special diagnostic and therapeutic applications; he keeps the medical staff informed about progress in physical research; he teaches (particularly in medical schools) advanced and specialized courses; and he advises the medical research workers whenever they need physical methods and instruments in their own research. Inquiries for such physicists have already been received from hospitals, and the Institute has in operation plans for the training of physicists for the medical field. The training of physicists and engineers in this field will also be of interest to a number of industries, in particular those concerned with medical instrumentation. The anticipated expansion of this branch will require specialists, trained engineers, physicists, and biologists to an extent which perhaps may be comparable to the man-power requirements of the chemical pharmaceutical industries.

To establish an efficient liaison between physics and medicine it is not merely sufficient for the physicist to know more about medicine and biology. It is also necessary for the physician to apply the physical way of thinking to these problems and to acquire some knowledge of the available physical technological methods. The writer has repeatedly found that the physician, thinking in biological rather than physical terms, does not always appreciate the necessity of an objective physical dosimetric measurement. In short-wave diathermy, for instance, the subjective feeling of heat is frequently used as a criterion for dosage of the treatment and has been defended as "biological dosimetry," which was considered superior to "mechanistic physical dosimetry." It is obvious that such a biological dosimetry contains two unknown variables: the physical field intensity and the physiological sensitivity of the patient. Two treatments on patients of different sensitivities can give entirely different results, although both patients indicate the same biological dose. A better training of the physician in physics (either premedical or postgraduate) and an additional training in instrumentation for the specialist in physical medicine are necessary not only for the physical quantitative approach but also for a successful collaboration between physics and medicine.

The need for such a training has been recognized by the Baruch committee on physical medicine which has recently granted funds for the equipment of a physical medical laboratory to teach physicians the physical technological methods which are or can be applied in medicine and to develop and investigate such methods and instruments as may be most promising. This project is already in operation, but at the present time only a very limited number of applicants can be trained. The program offers a great opportunity for an intensive collaboration of physician and physicist from which may be expected new and better applications of physics and technology in medicine.

ARCHIVES of PHYSICAL MEDICINE

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL MEDICINE

∴ EDITORIALS ∴

A REPORT FROM ENGLAND

In line with the international cooperation editorially¹ urged we publish in this issue a contribution from a distinguished colleague² from across the Atlantic, and expect this to be the introductory of a series of articles from leaders in physical medicine in Britain. Sir Morton Smart gives a comprehensive and impressive account of the evolution, present status and problems of physical medicine in his country. The first reaction of the American reader is that in many respects it duplicates the story of development here and repeats the struggle against the same handicaps. After World War I in England, like here, the technicians were first to organize to uphold standards; they likewise pledged themselves to practice only under medical supervision. In Britain, too, World War II, found a deplorable lag in training of a competent technical corps and a subsequent scurry to produce technicians, no matter how inadequately trained. No wonder that the danger of unqualified practitioners in the postwar era recurred. General practitioners in Britain seem to be more reluctant to acquire basic knowledge in physical medicine, with the result that many patients flock on their own to irregulars. Training of medical students in physical medicine is still lagging in Britain and heads of existing departments have to struggle against being relegated to subordinate rank instead of being given the opportunity to serve on an equal footing all departments of medicine for diagnosis and treatment. Overcrowding of physical therapy departments in England is reported to be a real menace in view of the pending extension of the national health service. Smart points to the pitfalls of too much institutionalization, and cites the recent formation of the British Association of Physical Medicine and the establishment of a diploma in physical medicine, tantamount to the granting of a specialist board here, as the main bright lights of progress there. Our British conferees are much impressed by the formation and work of the Baruch Committee here and wish for similar backing, governmental or otherwise.

There is so much in common between the ideals as to medical service and social responsibility of leading medical men on the two sides of the Atlantic Ocean, now a mere pond with half a day flying time, that close cooperation between representative bodies should prove equally helpful and stimulating. We look forward with pleasure and keen interest to the expected visit of Sir Morton at the time of our September meeting, to the series of articles and future visits by his British confreres and to further actual collaboration of the governing bodies of the two national societies of Physical Medicine.

1. International Cooperation, editorial, Arch. Phys. Med. 27:167 (March) 1946.

2. Smart, Morton: Physical Medicine in Britain, Arch. Phys. Med. 27:263 (May) 1946.

THE NEW ERA IN PHYSICS

There can be no doubt that we are in the midst of an unprecedented surge in the development and application of physical energies, which has in its implications already greatly exceeded the recent progress in the biochemical field. The creation of tremendous physical energies for destructive purposes by uranium fission has resulted in the precipitate ending of the Pacific War and forces entirely new concepts of the requirements for World security. The release of atomic energy for constructive purposes, even at this early stage, promises far reaching results by a new form of radioactivity; it may soon make all bulky radiotherapeutic equipment obsolete. At the same time, the extensive research in electronics in the medical field, as so impressively enumerated recently by Krusen,¹ is already promising a large number of startling new therapeutic and diagnostic applications; among these are beams of microwaves for focused heating of inner organs, photo-electric recorders to measure reaction times accurately, integrating exposure meters, new types of cathode-ray oscillography, high frequency coils for quick sterilization of surgical instruments, electron analyzers, binaural hearing aids and so on. The basis and detailed evaluation of these modern technological methods have been currently described by Lion.² The medical profession in general and specialists in physical medicine in particular must take heed of this new era in physics and should use every opportunity to improve their theoretical and practical knowledge of modern physics. The far seeing efforts of the Baruch Committee on Physical Medicine have provided for the first time in the United States systematic instruction on the interrelationship of biophysics, electronics and instrumentation as related to medicine. The report of Bearzy³ in this issue of the ARCHIVES on the details of this course of instruction is highly stimulating and timely and should induce many other physicians to take advantage of this opportunity.

1. Krusen, Frank H.: The Expanding Field of Physical Medicine, Proc. Staff. Meet., Mayo Clin. 20: 497 (Dec. 25) 1945; Arch. Phys. Med. 27:201 (April) 1946.

2. Lion, Kurt S.: Technology and Medicine. Modern Physical Technological Methods Initiate New Directions of Medical Research, Develop Better Instruments for Diagnosis and Therapy, and Open up New Careers, Technology Rev. 40, Feb., 1946, Arch. Phys. Med. 27:279 (May) 1946.

3. Bearzy, Herman J.: A Report on the Program of Training and Research in Physics and Technology Conducted at the Massachusetts Institute of Technology, Arch. Phys. Med. 27:274 (May) 1946.

PHYSIATRIST *

Now that the term "physical medicine" has replaced the designation physical therapy and has been generally accepted throughout the United States, a one word term is needed to designate the physician who specializes in this field. There now exist the Council on Physical Medicine of the American Medical Association, the American Congress of Physical Medicine and the Society of Physical Medicine. The Council now publishes a "Handbook of Physical Medicine" and the Congress publishes the ARCHIVES OF PHYSICAL MEDICINE. There has been a tendency to speak of technical workers in this field as physiotherapists or physical therapists.

* Reprinted J. A. M. A. 131:34 (May 4) 1946.

For more than two years a representative group from the membership of the American Congress of Physical Medicine has been discussing a suitable designation for the physician who specializes in physical medicine. Three such designations have been proposed, and all sound strange when first used. The three terms which have been suggested are (1) "physiatrist," (2) "physiatrician" and (3) "physicologist." Among all groups of physicians who have discussed these terms a distinct preference has been expressed for the designation "physiatrist." While this term may sound peculiar to the uninitiated ear, the terms "psychiatrist," "physicist," "internist" and "orthopedist" probably sounded equally queer when they were first proposed. The term "physiatrics" already appears in standard dictionaries as an acceptable word. The designation "physiatrist" is etymologically correct and stems from pure Greek origins. It derives from the two Greek words "physis" and "iatreia." "Physis" pertains to physical phenomena or natural phenomena and the terms "physicist" and "physiologist" derive their first syllables from the same origin. "Iatreia" refers to healing or healer or physician, so that physiatrist would be a physician who employs physical agents. At its last annual meeting the Council on Physical Medicine voted to sponsor the term "physiatrist" as the designation for the physician specializing in physical medicine. Now that fellowships or residencies in physical medicine are being offered at such institutions as the University of Pennsylvania, University of Minnesota, Harvard University, New York University, Ohio State University and University of Kansas and at many other medical centers, a one word term should designate physicians who complete such fellowships.

This publication of the action of the Council of Physical Medicine of adopting the term physiatrist as recommended by the Special Committee on Terminology¹ represents another important forward move in the evolution of the proper status of physical medicine. It is to be hoped that before long the final step, the official establishment of a specialty qualifying board on physical medicine, will become an accomplished fact. In the meantime let us employ the term physiatrist at all possible occasions so that the medical profession as well as the public will become used to it.

1. Preliminary Report of the Committee on Terminology of the Society of Physical Medicine, Arch. Phys. Med. 26:298 (May) 1945.



MEDICAL NEWS

Dr. Watkins Member of Editorial Board of New Journal

Dr. Arthur L. Watkins, on the editorial board of the *Archives of Physical Medicine*, has been appointed to the editorial board of *Occupational Medicine*, a new journal put out by the American Medical Association, starting January, 1946. According to the announcement this journal will be a clearing house for the best thought and experiences of medical leaders in industrial work.

Dr. Piersol Speaker

"Health in the Postwar Era" was the theme of the meeting of the sixteenth health institute held by the Woman's Auxiliary of the Philadelphia County Medical Society, April 9, in Philadelphia. Dr. George Morris Piersol of Philadelphia, and well known by the Congress members, was one of the speakers, his title being "The Future of Physical Medicine."

Dr. Arana Soto Responsible for Development of Physical Medicine in Puerto Rico

Much pioneering work in physical medicine is being accomplished in Puerto Rico by Dr. Arana Soto, a member of the Congress, and now Medical Director and Director of Physical Therapy of the Medical Division of the State Insurance Fund, Puerto Rico. This is the first organized department of physical therapy on the Island. It takes care of 150 workmen each day, all ambulatory patients. A Department of Occupational and Recreational Therapy is being started. Dr. Arana Soto is consulting Physical Therapist to the Hospital of the School of Tropical Medicine, University of Puerto Rico and Columbia University. He also is a member of the Professional Advisory Committee, representing physical therapy for the Insular Board for Vocational Rehabilitation. The Puerto Rico Medical Association has established with Dr. Arana Soto as Chairman, a Committee on Physical Medicine, Rehabilitation and Industrial Hygiene which has now also as members a general surgeon, an orthopedist, a traumatic surgeon and an industrial physician.

Dr. Hollender Retires as Professor Emeritus

Abraham R. Hollender, Miami Beach, Fla., who until recently was acting head of the department of otolaryngology, the University of Illinois College of Medicine, has been granted retirement by the university with the rank of professor of otolaryngology emeritus, effective February 1. Dr. Hollender has resumed practice in Miami Beach, Fla.

Dr. Northway Speaks on Polio

Dr. William H. Northway of Stanford University School of Medicine spoke on "Poliomyelitis, Its Early Treatment" as part of the sixty-fourth course of popular medical lectures sponsored by Stanford University School of Medicine.

Dr. Rudin Takes Mount Sinai Post

Dr. Louis N. Rudin, who organized and was head of the physical therapy section of Crile General Hospital for two years, has been named director of the department of physical therapy at Mount Sinai Hospital, Cleveland.

In announcing the appointment Max Myers, president of Mount Sinai, said the department was being reorganized and enlarged to give more service.

Dr. Rudin, who is a member of the American Congress of Physical Medicine, received his training in physical medicine at the Mayo Clinic, Rochester, Minn.

Activities of Members of Staff Baruch Center of Physical Medicine Medical College of Virginia

The following speakers participated in the program of the Virginia Academy of Medicine:

Dr. Josephine J. Buchanan, Medical Section, Poliomyelitis Medical College of Virginia, 1945.

Virginia W. Ramsey and Dr. Ernst Fischer, Medical Section, Changes in Myosin and Actin Content During Muscular Atrophies.

Mr. C. B. Cosby, Physics Section, Adaptation of Physical and Chemical Methods for Measurement of Ultraviolet Energy for Clinical Use; an Energy Integration Circuit for Timing Ultraviolet Treatment.

Sara Jane Houtz, Annie M. Parrish and Dr. F. A. Hellebrandt, Medical Section, The Influence of Heavy Resistance Exercise on Muscle Strength.

Dr. Hellebrandt also discussed the Vocational Opportunities in the field of Physical Therapy for student groups at Hampton Institute, the woman's College of the University of North Carolina and Winthrop College.

At the Conference on Muscular Contraction, sponsored by the New York Academy of Science in New York City one of the speakers was Dr. Ernst Fischer.

A Community Rehabilitation Center for Chicago

The Midwestern Section of the American Congress of Physical Medicine presented the following program in the launching of an appeal for a Community Rehabilitation Center for Chicago:

Herman Dunlop Smith, Moderator.

Harold Storms, M.D., Director, Workmen's Compensation Clinic, Toronto, Ontario.

Topic: Physical Structure and Equipment of a Rehabilitation Center.

Frank H. Krusen, M.D., Director, Department of Physical Medicine, Mayo Clinic, Rochester, Minnesota.

Topic: Personnel and Administration of a Rehabilitation Center; with especial Reference to the Baruch Committee's Report.

Miss Belle Greve, Director, Cleveland Rehabilitation Center, Cleveland, Ohio.

Topic: Services Rendered in a Rehabilitation Clinic, with Comments on UNRRA Help in War-Torn Greece.

Colonel John R. Smith, Jr., Director, Institute for the Crippled and Disabled, New York City.

Topic: Financial Setup of a Rehabilitation Center.

Miss Marjorie Taylor, Director, Curative Workshop, Milwaukee, Wisconsin.

Topic: Color Films Showing the Curative Workshop in Milwaukee in Action.

In addition to the Congress this program was sponsored by the Institute of Medicine of Chicago, the Chicago Medical Society, the Chicago Hospital Council and the Council of Social Agencies of Chicago. The committee is composed of:

The Rev. John W. Barrett, Chicago Hospital Council.

Edgar Blake, Jr., Chicago Hospital Council.

Joseph H. Chivers, M.D., Chicago Medical Society.

John S. Coulter, M.D., Council on Physical Medicine, American Medical Association.

Raymond M. Hilliard, Illinois Public Aid Commission.

C. K. Himmelsbach, M.D., United States Public Health Service.

John H. Lasher, Federal Office of Vocational Rehabilitation.

Leo M. Lyons, Chicago Hospital Council.

Charles O. Molander, M.D., American Congress of Physical Medicine.

William F. Petersen, M.D., The Institute of Medicine of Chicago.

Carl M. Peterson, M.D., Council on Industrial Health, American Medical Association.

Charles H. Phifer, M.D., Chicago Medical Society.

Henry T. Ricketts, M.D., The Institute of Medicine of Chicago.

Alexander, Ropchan, Council of Social Agencies of Chicago.

Frederick W. Slobe, M.D., Illinois Medical Society.

Mary L. Thompson, Council of Social Agencies of Chicago.

Willard O. Thompson, M.D., Chicago Medical Society.

Physical Therapy Section of Tri-State Hospital Assembly

The following program was presented in the physical therapy section of the Tri-State Hospital Assembly, held in Chicago, May 1 and 2, 1946, "My Experiences in Orthopedic Surgery in South Pacific in World War II." Dr. H. A. Sofield, As-

sistant Prof., Orthopedic Surgery, Northwestern University and Chief Surgeon, Chicago Unit, Shriners' Hospital for Crippled Children.

"Bed Exercises." Dr. Nila Covalt, Assistant Director, Physical Medicine in Charge of Physical Therapy, Medical Rehabilitation, Veterans Administration, Washington, D. C.

Panel on "What Your Hospital Should Know if Polio Strikes Your Community."

Dr. Jessie Wright, In charge of Physical Medicine and Physical Therapy at D. T. Watson School of Physical Therapy, Pittsburgh, Pennsylvania. Miss Mildred Elson, Executive Secretary, The American Physiotherapy Association, New York City. Miss Lois Olmstead, Associate Orthopedic Consultant, Joint Orthopedic Nursing Advisory Service, New York City. Miss Catherine Worthingham, Director of Technical Education, The National Foundation for Infantile Paralysis, Inc., New York City.

Eastern Section Meeting at Washington, D. C.

At the spring meeting of the Eastern Section, which took place April 13 at Walter Reed General Hospital, Washington, D. C., close to 200 attended the morning and afternoon meetings, with 70 at the banquet. Brigadier General George C. Beech, commanding general of the hospital, gave the message of welcome and cooperated with Lieutenant Colonel Ben Boynton, who was in charge of local arrangements.

Four conducted tours simultaneously followed different routes through the hospital. Of special interest were the observation of amputees driving automobiles equipped by the manufacturers with special gadgets to suit the individual case and the demonstration of skill by amputees in the swimming pool.

Three motion pictures were shown: "The Doctor in Industry," loaned by General Motors; "The Pathology of Herniated Intervertebral Disk" by Sheldon and Barr, loaned by the Navy, and "Technic of Ultraviolet Blood Irradiation," by Dr. G. J. P. Barger.

Papers were presented as follows: "The Place of Neostigmine in the Therapy of Chronic Arthritis, with Case," by Herman Kabat; "Problems of Arthritis Treated by Physical Medicine," by Harry Kessler; "Causalgia and Its Treatment," by Karl Harpuder; "Rapid Rehabilitation Following Hand Injuries," by Harold Leifkoë; "Modern Physiologic Concepts of Spinal Cord Function and Poliomyelitis," by Ernest Fischer; "A Consideration of Certain Physiologic and Kinesiologic Principles That Are Frequently Neglected in the Application of Therapeutic Exercises," by Charles D. Giauque and "Physical Instrumentation in Medical Research," by Kurt Lion.

After the banquet Lieutenant Colonel Donald L. Rose gave a pictorial presentation of the physical therapy work at Walter Reed General Hospital during the war years.

Rehabilitation — More Qualified Physical Therapists Are Said to Be Needed in VA Hospitals to Give Patients the Best of Medical Care *

As an outgrowth of criticism hurled at the medical service of the Veterans Administration last year, a separate and independent Department of Medicine and Surgery, similar to those of the armed services, was established by Congressional action in January.

One of the features of the act, which VA officials deemed essential, was the authority to procure professional medical personnel directly and to increase salaries of such personnel in order that qualified persons would be attracted to the service.

This authority for direct recruitment which has elevated the professional stature of the service, however, has been limited to doctors, nurses and dentists. All other personnel are still employed through Civil Service, and considerable controversy has arisen over salary increases and professional status in certain categories. This situation is particularly acute in the case of physical therapists where serious personnel deficiencies prevented the VA from giving the high type medical care promised.

Although the A. M. A. and the American Hospital Association insist that therapists employed in civilian hospitals be qualified graduates from approved schools, the great percentage of those employed in VA hospitals and clinics are not so qualified.

The VA currently needs 890 therapists to meet their ever-increasing loads, but there are actually only 322 on duty. Of these, only 117 are professionally qualified. VA rehabilitation experts have estimated that nearly 1,400 therapists will be needed by midsummer of next year.

In the past few months about 800 therapists have been released from the Army. Of this number, in spite of personal letters written to each of them by the VA, only nineteen have been obtained.

The ineffectiveness of this intensive recruiting drive is shown by the fact that in the past fifteen months the VA has been able to employ less than fifty therapists.

The reason that VA is unable to attract therapists is the low wage scale and the lack of professional recognition by Civil Service. With the exception of but three individual positions in the entire VA medical service, Civil Service regulations provide that therapists in the VA carry sub-professional ratings from SP-5, paying \$2,100 a year, to SP-8, paying \$2,980.

This wage scale is considerably less than therapists were receiving in the Army and accounts for their lack of interest in VA positions. Therapists in the Army were given direct commission

in the rank of second lieutenant, for which the base pay is \$1,800.

In addition second lieutenant therapists received \$792 a year in rental and subsistence allowance if without dependents, and \$1,260 per year with dependents. Added to this were the advantages of free hospitalization, medical and dental care, the privileges of purchasing at post exchanges and commissaries.

Also commissioned therapists had the opportunity to purchase Government line insurance, the advantages of the GI Bill of Rights, and many other benefits. When all of these are considered, the discrepancy between the pay in the Army as compared to the VA is striking.

Special Exhibit on Physical Medicine, Physical Therapy, Occupational Therapy and Rehabilitation — 1946 Session American Medical Association, San Francisco, July 1-5, 1946

This general exhibit on physical medicine including physical therapy, occupational therapy and rehabilitation should present an excellent opportunity to educate the rank and file of the medical profession concerning the importance of physical medicine.

The general theme of the exhibit will be to point out the important advances in teaching and research in physical medicine, in technology as applied to physical medicine, in the combined employment of physical therapy occupational therapy and rehabilitation as developed in our military hospitals and to urge the prompt recognition of these advances by all civilian institutions and to advocate the prompt establishment of suitable programs in all civilian hospitals and medical centers.

A brief description of each part of this special exhibit follows:

Booth 101. — Recent Developments in Physical Medicine. — Dr. *Frank H. Krusen*, Baruch Committee on Physical Medicine. This exhibit will outline recent developments in teaching and research as related to physical medicine. New training centers will be described.

Booth 103. — The Community Rehabilitation Center. — Dr. *Howard A. Rusk*, Baruch Committee on Physical Medicine. This exhibit will present flow charts, organizational charts, floor plans, and other data on an ideal community rehabilitation center.

Booth 105. — Education in Physical Medicine. — Dr. *Frances Hellebrandt*, Medical College of Virginia. This exhibit will include data concerning agencies employing physical medicine, undergraduate and graduate education in physical medicine, education of technicians, and objective criteria for evaluating departments of physical medicine.

Booth 107. — Technology and Medicine. — Dr. *Kurt Lion*, Massachusetts Institute of Technology. This exhibit will deal with methods of teaching the fundamentals of technology and biophysics to physicians.

Booth 102. — Physical Medicine in Military Hospitals. — Capt. *Herman L. Rudolph*, U. S. A. M. C.

* Howard A. Rusk, M.D., *New York Times*.

This exhibit will present a pictorial review of physical medicine in military hospitals and certain forms of physical therapy and occupational therapy will be demonstrated.

Booth 104. — Reconditioning in Chest Diseases. — Lt. Col. *O. Leonard Huddleston*, Reconditioning Consultants Division, U. S. A. M. C. This exhibit will present methods of physical reconditioning in diseases of the chest.

Booths 106 and 108. — Heavy Resistance Exercise Therapy. — Capt. *Thomas L. DeLorme, Jr.*, U. S. A. M. C. This exhibit will present a method of providing heavy resistance exercises in management of certain orthopedic diseases.

Booth 110. — Physical Rehabilitation of Amputees. — Comdr. *Harry Etter*, Bureau of Medicine and Surgery, U. S. Navy. This exhibit will demonstrate methods of employing physical therapy and occupational therapy in the rehabilitation of amputees.

Booth 112. — Restoring Injured Workers. — Drs. *Frances Baker* and *William H. Northway*, University of California Hospital and Stanford University Hospitals. This exhibit will demonstrate physical and occupational therapy as employed in restoring injured workers.

Booth 114. — Physical Rehabilitation of Paraplegics. — Dr. *George Deaver* and Maj. *A. B. C. Knudson*, U. S. Veteran Administration. This exhibit will demonstrate physical therapeutic methods employed in rehabilitation of patients with injuries of the spinal cord.

Booth 111. — Vocational Placement of the Handicapped Worker. — Dr. *Carl Peterson* (assisted by Mr. *Clark D. Bridges*). Council on Industrial Health of the American Medical Association. This exhibit will demonstrate exact technics for the satisfactory placement of handicapped persons in industry.

Space 115. — Motion Pictures on Physical Medicine. — Dr. *Winfred Overholser*.

Items of Interest

At the meeting of the Minnesota Welfare Conference in St. Paul, April 23, an interesting discussion on rehabilitation was presented. The chief speaker was Mr. Donald Dabbelstein, Chief, Vocational Placement, Vocational Rehabilitation Division, Federal Security Agency, Washington, D. C. Dr. Frank H. Krusen presided.

It is reported that the National Naval Medical Center at Bethesda, Maryland, has established a training course for physical and occupational therapists. Lieut. Don Erickson is directing this program.

Captain Howard Montgomery formerly chief of Rehabilitation in the Bureau of Medicine and Surgery, Navy, has recently been named commanding officer at the Philadelphia Naval Hospital. He is succeeded in the Bureau of Medicine and Surgery by Captain Gordon Tayloe and Commander Harry Etter.

Colonel E. M. de Young is the new chief of the Reconditioning Consultant Division in the office of the Surgeon General of the Army.

Dr. Ludwig Eichna has been appointed professor of research in physical medicine at New York University.

Dr. Ora L. Huddleston has assumed his new duties as director of physical medicine, University of Southern California, Los Angeles.

Dr. Darling is director of research in physical medicine, Columbia University, College of Physicians and Surgeons.

Word has been received that the Army has initiated a new program "in service" training in physical medicine for physicians.

Hospitals Approved for Residency Training in Physical Medicine

- ¹Los Angeles County Hospital, Los Angeles.
- ¹Massachusetts General Hospital, Boston.
- Mayo Foundation, Rochester, Minnesota.
- Michael Reese Hospital, Chicago.
- ¹Montefiore Hospital for Chronic Diseases, New York City.
- ¹Mount Sinai Hospital, New York City.
- Passavant Memorial Hospital, Chicago.
- ¹Presbyterian Hospital, New York City.
- St. Luke's Hospital, New York City.
- Stanford University Hospitals, San Francisco.
- ¹State of Wisconsin General Hospital, Madison, Wisconsin.
- ¹University of California Hospital, San Francisco.
- ¹University Hospitals, Minneapolis, Minnesota.
- Walter Reed General Hospital, Washington, D. C.
- University of Kansas Hospital, Kansas City, Kansas.

1. Indicates temporary approval.

National Committee on Atomic Information

In addition to an executive committee, the following have been elected officers of the National Committee on Atomic Information: Chairman, Ralph McDonald, National Education Association; Vice-Chairman, Helen Dwight Reid, American Association of University Women; Secretary, Mrs. Joy Falk, United Council of Church Women and Treasurer, Rev. T. A. Conway, Catholic Association for International Peace.

Development of High Educational Standards by the Medical Profession*

Dr. Ray Lyman Wilbur, Chairman, Council on Medical Education and Hospitals, American Medical Association, has stated:

More equipment and, above all, a more highly trained personnel are now required in every medical center. There will need to be an increase in skilled trained nurses and laboratory technicians.

Particularly is this true in the field of physical medicine, which is now coming into its own. The human machine is a biologic instrument that has been played on by forces in the world environment over the whole period of human history. The effect of these forces, such as heat and cold, sunshine and shadow, led to adaptations that have carried man to all parts of the earth. The treatment of the sick has gone through periods when the applications of what we now call "physical medicine" have been widely

* Reprinted J. A. M. A. 130:1057 (April 20) 1946.

and wisely used. With the new medicine that came out of the laboratory and the clinic, many of these therapeutic processes were largely forgotten. There is now a fortunate revival of the procedures of physical medicine at a time when the various rays show promise of giving material aid to the sick and when we are finding it possible to tag certain electrons so that we can follow their distribution throughout the body. This gives us hope that we can selectively treat with the various elements parts of the body that are subject to disease processes.

Annual Conference American Physiotherapy Association

The Annual Conference of the American Physiotherapy Association will be held at the Blue Ridge Assembly, Black Mountain, North Carolina, from June 16 to June 22. The association is celebrating the Twenty-Fifth Anniversary of its organization at this time.

The officers and members of the American Congress of Physical Medicine are cordially invited to attend. Reservations may be made by writing the American Physiotherapy Association, 1790 Broadway, New York 19, N. Y.

Schools for Physical Therapy Technicians*

The House of Delegates of the American Medical Association in 1934 requested that some plan be effected for the establishment of standards, ratings and inspections of schools for the training of physical therapy technicians. The Council on Medical Education and Hospitals assumed responsibility for this program and by 1936 had completed a survey of these schools. Certain minimum standards were formulated. These were presented to the House of Delegates of the American Medical Association and were ratified in May, 1936. The first published list of 13 approved schools appeared in the *Journal* in August, 1936.

Last year there were 32 approved schools training physical therapists. All of the Army and two of the civilian schools have discontinued their courses so that now there are 21 offering acceptable training. Furthermore the emergency courses have recently been discontinued. These courses presented all the didactic instruction before students were transferred to army units where acceptable supervised experience could be obtained. On completion of the required experience these students will be certified.

The 786 graduates in 1945 established a new record. In 1946 there will be approximately 752 graduates. This estimate includes the emergency course students referred to and 18 navy nurses who are being given approved training somewhat similar to the emergency course.

The maximum capacity of the 21 currently approved school totals 480 students, but these same schools plan to graduate 483 therapists. A few schools are graduating more students than their reported capacity.

Six courses are designed for high school graduates who will need four years of training. Practically all schools will admit nurses and physical education majors. Three or four years of college work fulfill the entrance requirements in all but

two of the approved schools for physical therapy technicians.

Tuition is free in one school while in other centers it closely parallels university fees. The average tuition is \$208 and the mean is \$200. In 1946 it is expected that all schools will have completed college affiliations. Physical therapy courses are presented on the collegiate level and carry semester credits in 14 schools. Nine schools issue a degree and the remainder present a certificate or diploma when the curriculum has been completed.

General Hawley Chief Medical Director

Gen. Omar N. Bradley, administrator of veterans affairs, recently announced that Major Gen. Paul R. Hawley retired from the Army, closing a career of twenty-nine years in the Army Medical Corps, has accepted an appointment as chief medical director of the Department of Medicine and Surgery in the Veterans Administration.

American College of Surgeons Announces Meeting in 1946

The clinical congress of the American College of Surgeons will be held at the Waldorf-Astoria, New York City, September 9 to 13, 1946.

Department of Medical Physics at California

A department of medical physics has been established within the department of physics at the University of California School of Medicine, on the Berkeley campus to apply the products of the cyclotron to the study of health and disease and for human betterment. Close liaison will be maintained with the medical school and the radiation laboratory, as well as with the department of physics. Because of the war, many men of the science departments still are on leave. However, work in the new department, headed by Dr. John H. Lawrence, will go forward as rapidly as possible.

Dr. Slight to Direct Rehabilitation

Dr. David Slight, Chicago, has been appointed acting superintendent of a new state division of veterans' rehabilitation centers. Dr. Slight, who will resign June 30 as professor and head of the department of psychiatry, University of Chicago School of Medicine, where he is now on sabbatical leave, will direct a statewide system of rehabilitation centers planned under the new division, which will be a part of the public welfare department.

Naval Medical Officers Commended

Secretary of the Navy James Forrestal recently commended a number of key personnel in the Bureau of Medicine and Surgery for meritorious performance of duty during the war period.

Capt. Howard H. Montgomery (MC), U. S. N. (Washington, D. C.), was cited for outstanding performance of duty, first, as head of the Division

* Reprinted J. A. M. A. 130:1156 (April 30) 1946.

of Physical Requirements and Medical Records, and, later, as organizer of the Navy's medical rehabilitation program.

Physical and Occupational Therapists in Hospitals*

	Physical Therapists		Occupational Therapists	
	Full Time	Part Time	Full Time	Part Time
Alabama	51	4	40	3
Arizona	16	1	11	---
Arkansas	31	3	23	1
California	475	46	240	32
Colorado	41	21	26	15
Connecticut	51	9	41	8
Delaware	9	1	10	2
District of Columbia	38	4	40	2
Florida	77	7	42	5
Georgia	88	9	59	6
Idaho	11	---	9	---
Illinois	251	26	213	34
Indiana	62	10	64	4
Iowa	42	10	22	4
Kansas	43	10	39	---
Kentucky	32	6	37	2
Louisiana	38	3	13	1
Maine	13	3	11	---
Maryland	61	14	64	5
Massachusetts	158	24	171	6
Michigan	128	10	93	4
Minnesota	45	15	45	5
Mississippi	17	6	28	1
Missouri	106	14	66	60
Montana	6	4	3	1
Nebraska	18	4	21	---
Nevada	1	2	---	---
New Hampshire	6	3	16	3
New Jersey	134	33	155	10
New Mexico	14	1	17	---
New York	523	81	570	35
North Carolina	61	4	30	4
North Dakota	6	6	2	1
Ohio	133	18	82	10
Oklahoma	50	2	22	1
Oregon	22	1	13	---
Pennsylvania	196	77	135	22
Rhode Island	19	5	23	2
South Carolina	18	5	12	---
South Dakota	15	3	6	1
Tennessee	62	5	40	5
Texas	155	16	112	15
Utah	56	2	15	---
Vermont	8	---	10	---
Virginia	106	4	79	1
Washington	91	10	54	1
West Virginia	55	21	26	1
Wisconsin	69	18	41	8
Wyoming	8	2	10	1
Totals (1945)	3,716	583	2,902	322
(1944)	3,220	747	2,266	346
(1943)	2,905	719	1,883	351
(1942)	2,643	772	1,727	283
(1941)	2,505	602	1,882	350

* Reprinted J. A. M. A. 130:1085 (April 20) 1946.

Report of Children's Bureau

The main activities of the Children's Bureau are summarized in the thirty-third annual report under the following headings: Developing proposals for national policy; administering services; finding and using the facts; sharing information and experience with the general public; and international cooperation. Recommendations are made as to the programs and emphases that should be developed.

Dr. Vogel Named Chief of Vocational Rehabilitation

Dr. Victor H. Vogel of Denver has been named chief medical officer of the Office of Vocational Rehabilitation. Dr. Vogel, a senior surgeon in the U. S. Public Health Service and formerly assistant chief medical officer of OVR, succeeds Dr. Jack Masur, who has accepted a position as hospital consultant for the Federation of Jewish Philanthropies, New York City.

Commission for the Physically Handicapped

Hearings have been scheduled by a subcommittee of the House Committee on Labor on H. R. 5206, a bill to establish a Federal Commission for the Physically Handicapped in the Department of labor. The hearings begun on April 30 will conclude, it is contemplated, on May 4. This bill, among other things, proposes to transfer to the federal commission to be created all functions of the Office of Vocational Rehabilitation now in the Federal Security Agency. The bill would establish in the commission separate divisions for special work with the deaf, the hard of hearing, cardiac patients, the tuberculous, the poliomyelitic, the epileptic, amputees and any other large or distinct groups of physically handicapped.

Doctors Named to Veterans Administration Staff

Two assistant administrators and five specialists have been appointed to the Veterans Administration medical staff, Dr. Paul R. Hawley, medical director, announced. Dr. J. C. Harding of Washington will be assistant medical director for auxiliary services, and Dr. M. M. Fowler of Chevy Chase, Md., will be assistant medical director for dental services. Five physicians named as part time chiefs of sections in the professional services division are Brig. Gen. James S. Simmons, who directs the Army's preventive medicine program, tropical medicine; Dr. Albert M. Snell of the Mayo Clinic, gastroenterology; Dr. Charles C. Wolferth, University of Pennsylvania Hospital, cardiology; Dr. Harry L. Alexander, Washington University School of Medicine, allergy; Dr. James H. Maxwell, University of Michigan Medical School, otolaryngology. The Veterans Administration has ordered an acceleration in hospital construction to relieve a current shortage of beds in veterans' hospitals. The agency has called for 1,500 rehabilitation specialists to aid in a medical program of education and shop training for vet-

erans' hospitals. Dr. Donald A. Covalt, assistant director for medical rehabilitation, hopes to provide training for 5,000 persons in reconditioning and convalescent programs.

New Editor for "Practitioner"

Sir William Ogilvie, London, has been appointed editor of the *Practitioner*, to succeed Dr. Alan A. Moncrieff, London, who has resigned on his appointment to the Nuffield professorship of child health at the University of London. Dr. Moncrieff has been senior editor of the *Practitioner* since 1943, when he succeeded the late Sir Humphrey Rolleston.

Retirement of Dr. Olin West, Secretary-General Manager

According to the official announcement from the Board of Trustees of the American Medical Association, Dr. Olin West, Secretary-General Manager of the American Medical Association for more than twenty-three years, retired from his official duties on April 1.

Dr. Olin West came to the American Medical Association with a record of experience in medicine and public health that especially fitted him for the positions that he assumed. His preliminary education was received at Howard College in Alabama, in which state he was born at Gadsden on July 12, 1874. He graduated from Vanderbilt University School of Medicine, Nashville, Tenn., in 1898. In 1910, after twelve years of practice in Nashville and fifteen years as a member of the faculty of Vanderbilt University, first as instructor and later as assistant professor and associate professor in chemistry, Dr. West became director for the Rockefeller Sanitary Commission and International Health Board in Tennessee. Here he was especially effective in the great campaign against hookworm infection. In 1918 he became secretary and executive officer of the Tennessee State Board of Health and after four years gave up that position to become field secretary of the American Medical Association in association with Dr. Alexander Craig, who was at that time Secretary. Following the death of Dr. Craig, Dr. West was appointed Secretary by the Board of Trustees. Then when Dr. George H. Simmons resigned as Editor and General Manager of the Association in 1924, Dr. West continued in the position of Secretary and succeeded to the duties of General Manager.

National Council on Rehabilitation

Part of the program follows which was presented at the annual meeting of the National Council on Rehabilitation, held at the Ritz-Carlton Hotel, New York City, April 24 and 25.

The Rehabilitation Center. — Structure, Organization, and Personnel Requirements, "Planning for a Rehabilitation Center for Veterans," by Colonel John

N. Smith, Jr., Director, Institute for the Crippled and Disabled, New York City; "Report on a Rehabilitation Center for the Disabled," by Hazel E. Furscott, Administrator, The Rehabilitation Center of San Francisco, Inc., California, and "The Hospital and Rehabilitation," by Martin G. Vorhaus, M.D., Attending Physician, Hospital for Joint Diseases, New York City.

"The State Vocational Rehabilitation Services. The Story of Their Expansion Under Public Law 113," by Michael J. Shortley, Director, Office of Vocational Rehabilitation.

"The Development of Adequate Referrals Through Inter-Agency Cooperation," by Miss Helen M. Becht, Director of Rehabilitation, Queensboro Tuberculosis and Health Association, Jamaica, New York.

Dr. Goldblatt Goes to California

Dr. Harry Goldblatt has resigned as professor of experimental pathology and associate director of the Institute of Pathology at Western Reserve University, Cleveland, effective in August, to become director of an Institute for Medical Research being built for him at Cedars of Lebanon Hospital, Los Angeles. Physicians interested in physical medicine will remember Dr. Goldblatt as coauthor with Dr. Howard T. Karsner of the article in the *Manual of Physical Medicine*, "Evaluation of Methods Used in Physical Medicine."

James Wilson Honored

Dr. James R. Wilson, who left his medical activities in Syracuse to join the American Medical Association as Secretary of the Council on Foods and Nutrition, was given a farewell dinner by the Syracuse University College of Medicine, where he was associate professor of medicine.

Artificial Limb Shop to Be Opened Near Manila

The Surgeon General announces that an artificial limb shop for the Army's Filipino amputees will be established in the Philippine Islands in the near future. The project, which it is anticipated will require six months to organize, will be directed by a group of especially qualified personnel selected from the Army's Amputation Centers.

This center, to be located near Manila, will have the two-fold purpose of establishing an organized limb shop as well as providing instruction for the Filipino Medical Department personnel. When they are considered sufficiently skilled, the shop will be turned over to them for operation.

One of the officers selected for this team is 1st Lieutenant Carol Stange, M-531, Medical Department Physical Therapist, who has had extensive experience in the physical therapy phase of the amputation program at Lawson and McGuire

General Hospitals. A fully equipped gymnasium will be set up under her direction where she will organize the walking program, instruct the Filipinos in exercise technic and other routine procedures. Prior to her departure, Lieutenant Stange was assigned to the Office of the Surgeon General for a few days conferring on final arrangements for the physical therapy phase of this interesting project.

Physical Reconditioning and Physical Therapy to Present Joint Exhibit

A joint exhibit illustrating the physical therapy reconditioning exercise programs conducted by the Army Medical Department was presented by the Physical Reconditioning and Physical Therapy Branches, Office of the Surgeon General, at the National Convention of the American Association for Health, Physical Education and Recreation.

The convention was held in the Jefferson Hotel in St. Louis, Missouri, from the ninth to the thirteenth of April. Items on display in the exhibit includes posters, charts and photographs illustrating the physical reconditioning and therapy procedures, and remedial and developmental exercise apparatus. Representatives from both the Surgeon General's Office and the Physical Reconditioning staff of O'Reilly General Hospital, Springfield, Illinois, were on hand to answer questions and demonstrate the use of equipment.

Australian Society of Physical Medicine

The Australian Society of Physical Medicine was founded in 1945 as a sub-branch of the British Medical Association (Australia). Its chairman is Dr. Frank May of Melbourne, well remembered by the many friends he made in the United States at his study trip here some ten years ago, and a member of the American Congress of Physical Medicine ever since; Dr. B. G. Wade of Sidney is Vice-Chairman and Secretary; Drs. L. Parr and Arthur S. Lippman of Sidney are the other executive officers.

Cease and Desist Orders Abstract of Federal Trade Commission Release

Brooks Rupture Appliance and Automatic Air Cushion. — Brooks Appliance Company, Harold C. Brooks and Craig W. Brooks, Marshall, Mich., New York and Chicago; complaint issued Nov. 2, 1943; order issued Jan. 29, 1944. Order directed respondents to discontinue any advertising representing that the devices mentioned constitute a competent remedy or cure for hernia. Order also directed Fogarty-Jordan-Phelps Company, Chicago, an advertising agency, to discontinue the false and misleading representations that the truss

in question will do away with all discomfort and worry caused by hernia, enable the wearer to undertake and enjoy hard work and strenuous play, that in every case it will hold reducible hernia securely and comfortably in place at all times, can be depended on to assist nature in healing hernia to the extent that the need of a truss or other support will be eliminated; that it will make strangulation of hernia impossible, and that the device adjusts itself to every movement of the body, and its air cushion attachment is fully automatic and clings to any spot to which it is adjusted. The order further directed the respondents to cease representing that another Brooks device, the "Natural Uterine Supporter," is an effective treatment for uterine displacements and will relieve or cure ailments and diseases caused by displacements of the womb. — Reprint J. A. M. A. 130:967 (April 6) 1946.

New Head of Oxford Press Medical Department

Russell I. Garton has been named to succeed Frederick F. Randolph as head of the medical department of Oxford University Press, New York and London, effective April 1.

Dwight O'Hara Named Dean of Tufts

Dr. Dwight O'Hara, Waltham, president-elect of the Massachusetts Medical Society and professor of preventive medicine, Tufts College Medical School, Boston, has been made dean of the medical school. He has been acting dean for the past four years while Dr. Albert W. Stearns was on leave to the Navy Medical Corps. Dr. Stearns recently became head of the new department of applied sociology in the Tufts School of Liberal Arts, according to the New York Times. Dr. O'Hara graduated at Harvard Medical School, Boston, in 1919.

Veterans to Get Three Way Hospitalization Program

Gen. Omar N. Bradley, Veterans Administrator, has announced a three way hospitalization program for his agency which he says will give ex-servicemen and women medical care "second to none." The three points are (1) immediate construction of new hospitals to cost \$448,000,000, eighty in all, with additions to present hospitals, (2) a drive to staff Veterans Administration hospitals with the best doctors in the country and (3) an arrangement with state medical groups to give veterans with service connected disabilities treatment in their own home towns by their own private doctors and hospitals. Dr. (formerly Major General) Paul R. Hawley, chief of the Veterans Administration new Department of Medicine and Surgery, already has some of the plans in opera-

tion on behalf of war veterans. Congress has authorized the \$448,000,000 for hospitals but has appropriated only \$300,000,000. The agency is confident that the remaining \$148,000,000 will be forthcoming. The agency is at present seeking four hundred physicians to fill vacancies as rating specialists in regional offices. Veterans are to be given preference in appointments as consulting specialists for veterans' hospitals.

Annual Reports of Government Agencies

Annual reports of various governmental services have recently been made available, including those for the U. S. Public Health Service, Veterans Administration, Food and Drug Administration and Federal Security Agency, for the fiscal year ending June, 1945. The annual report of the Gorgas Memorial Laboratory for the fiscal year of 1944 has also been published.

Dr. Hudson Named Dean of State Graduate School

Dr. N. Paul Hudson, professor and chairman of the department of bacteriology, Ohio State University College of Medicine, Columbus, and the university graduate school, has been named dean of the graduate school to succeed Alpheus W. Smith, Ph.D., who will retire August 31. He has been associated with the Ohio State University since 1935.

Lieutenant Colonel J. F. Hammond Awarded Legion of Merit

Lieutenant Colonel Johnson F. Hammond, MC, Editor of the Bulletin of the United States Army Medical Department, has been awarded the Legion of Merit for his work in developing "this journal into an invaluable means of relaying the latest authoritative medical developments to medical officers all over the world. His achievements signally contributed to the welfare of the sick and wounded in World War II."

Entering the Army Medical School, Washington, D. C., in 1911, Colonel Hammond was commissioned in the Regular Army Medical Corps on his graduation in 1912. Following service in California, Philippine Islands, Texas, Illinois, and the District of Columbia, he was retired in 1920 for physical disabilities. Soon after his retirement he was returned to active duty in his former position as Director of the Sixth Corps Area Laboratory, Fort Sheridan, Illinois, where he served until June of the following year.

In 1922 he joined the staff of the Journal of the American Medical Association in Chicago, and remained there until he was recalled to active service in August of 1943. Since that time, he

has been on duty in the Office of the Surgeon General as Editor of the Bulletin.

Commission Appointed to Study Prosthetic Progress in Europe

Five army and civilian experts comprising a commission on prosthetic devices will leave Washington soon for a study of European technics in amputation surgery, developments in the field of prosthetics and artificial limbs, and the rehabilitation and reconditioning of amputees. The commission is being sent by Major Gen. Norman T. Kirk, Surgeon General of the Army, at the direction of Secretary of War Patterson. It will visit scientific centers in England, France, Switzerland, Germany, Sweden and possibly Russia. Heading the unit is Col. Leonard T. Peterson, Medical Corps, of Washington, D. C., chief of the amputation and prosthetic unit, Surgeon General's Office. Other members are Dr. Paul E. Klopsteg, director of research at the Northwestern University Technological Institute; Lieut. Col. Robert G. F. Lewis, Ordnance Department of New York City, engineer assigned to the Surgeon General's Office; Lieut. Col. Rufus H. Alldredge, Medical Corps, of New Orleans, chief of the amputation section, England General Hospital, Atlantic City, N. J., and Mr. Edmond N. Wagner of San Marino, Calif., consulting engineer. Dr. Klopsteg is chairman of the Committee on Prosthetics of the National Research Council. Mr. Wagner formerly was chief of the engineer section of the Office of Scientific Research and Development. Technician Third Grade John P. Gavell, Medical Department, of Danbury, Conn., will accompany the group as recorder.

For several months members of the commission have been making preliminary investigations of the latest technics in amputation surgery and developments in prosthetic devices, particularly those developed by German scientists which were unavailable for study during the war.

One of the types of surgery to be investigated is cinoplastic surgery, which involves connection of the activating cords of the artificial limb to the muscles by means of pins made of inert or non-irritating material. The pin is inserted through the skin lined tunnel in the muscle. While this treatment has been used to some extent in treatment of amputees, the commission hopes to find means of improvement to increase the utility of the artificial limb. Research is now conducted which suggests that cinoplastic surgery may be extensively applied in prostheses in the near future.

State Geriatrics Institute

A one day geriatrics institute sponsored by the Indiana University School of Medicine, Indianapolis, and the Indiana State Board of Health will be held in the auditorium of the university May 22.

Detroit Curative Workshop

The Curative Workshop with quarters at 65 Ferry Avenue, West Detroit, was recently incorporated as an independent organization. The workshop has been approved by the Wayne County Medical Society, which has also named the medical advisory committee, including Drs. Wyman D. Barrett, chairman; Leo H. Bartemeier, Arbie L. Brooks, Ralph E. Hall, Clyde N. Halsey, James W. Lasley, John J. Prendergast, Jr., Frank H. Purcell, Robert J. Schneck and Francis Walsh, all of Detroit, and Earle A. Irvin, Grosse Pointe. The present workshop is an outgrowth of the program started in 1934 by the Visiting Nurses' Association. The present activity was evolved in March, 1945, when representatives of the board of the Visiting Nurses' Association and the Detroit Orthopaedic Clinic consulted with the Wayne County Medical Society. Miss Helen King is technical director of the Curative Workshop.

Disabled Veterans to Train for Skilled Jobs

Dr. Paul R. Hawley, chief medical director of the Veterans Administration, recently announced the first industrial agreement to train severely disabled veterans in Veterans Administration hospitals for skilled and semiskilled jobs. The Bulova School of Watchmaking, Woodside, L. I., N. Y., will conduct the program under arrangements negotiated by Dr. Donald A. Covalt, acting assistant director of Veterans Administration Medical Rehabilitation, and Stanley Simon, trustee of the Bulova school.

Baruch Committee Blueprints Community Rehabilitation Centers

Thousands of America's handicapped and disabled are prevented from becoming self-sufficient, employable citizens because of the existing lack of rehabilitation centers, throughout the country, according to a report issued by the Baruch Committee on Physical Medicine. The report, prepared for Mr. Bernard M. Baruch, New York philanthropist who founded the Committee in 1944 to further research, teaching and training in physical medicine, blueprints the organization and operation of model community rehabilitation centers. Through such centers it estimates that up to 97 per cent of the nation's handicapped can be rehabilitated to the extent of gainful employment.

Prepared by a sub-committee of six authorities with military and civilian rehabilitation experience, the report translates the experience of the armed forces in rehabilitation to its civilian applications. It states that the majority of the twenty-three million handicapped persons in the nation urgently in need of physical rehabilitation, psycho-social adjustment, and vocational guidance and training are denied these services because of inadequate facilities.

The report points out that during the war when handicapped workers were employed in 83 per

cent of the nation's industries, contrary to general belief, they had a much smaller labor turnover, less absenteeism, fewer accidents, and equal or higher production rates than normal workers.

The average cost of rehabilitating handicapped individuals to the point of employability, the report states, is less than the annual cost to the taxpayer of maintaining such individuals and their families on local assistance rolls.

The Committee suggests that the centers envisioned might be established by communities as "living war memorials" through the action of local governments, civic groups, social agencies, or medical schools and hospitals. They point out that both the construction and operating costs of such centers would be considerably less than for hospitals, and would release needed hospital beds for acutely ill patients. Such centers, once established, according to the report, would be relatively self-supporting as fees would be received from private patients, the Veterans Administration, state rehabilitation programs, industry and insurance companies.

The report stresses the need not only for large highly specialized urban rehabilitation centers, but for a system of mobile consultant clinics comparable to those which have been used in the cancer and crippled children's programs to carry opportunity to the isolated disabled person.

It emphasizes that the proposed rehabilitation centers should integrate rather than duplicate the services offered by existing community agencies.

The activities of the suggested centers include physical medicine (physical therapy, occupational therapy, physical rehabilitation), psycho-social adjustment, vocational guidance, social service, vocational education, special education for the handicapped, a sheltered workshop, brace and limb shop, research in rehabilitation, and an industrial program for the homebound. The importance of training the disabled in the essentials of self care and mobility is stressed, in order that they may become self-sufficient in the daily activities of life as well as work.

The centers would not provide definitive medical treatment, but would bridge the gap between the bed and the job by following preventive and curative medicine with rehabilitation, which the committee terms "the third phase of medical care." The majority of those receiving rehabilitation and retraining would come to the proposed centers on an out-patient basis, but dormitory facilities are suggested for those whose disabilities are so severe they are unable to travel independently.

In issuing the report, Dr. Frank H. Krusen, Director of the Baruch Committee on Physical Medicine, said, "It was recognized early in 1945 that much had been learned in the rehabilitation programs of the armed forces which would be of value to physically and emotionally disabled civilians. The armed forces through their comprehensive rehabilitation program offered services to disabled servicemen which are available to the civilian handicapped in but a few highly specialized centers in the country. It is the hope of the Com-

mittee that this report will stimulate interest in the establishment of such centers and services throughout the nation in order that our civilian disabled may receive the same splendid care that was afforded our disabled servicemen."

The report, which contains organizational charts, estimated costs, itemized lists of needed equipment, personnel requirements and similar data, was prepared by a special committee under the chairmanship by Dr. Howard A. Rusk, Consultant on Physical Rehabilitation to the Baruch Committee on Physical Medicine, and member of the staff of the New York Times; Dr. George G. Deaver, New York University College of Medicine, and Medical Director of the Institute for the Crippled and Disabled; Mr. Lawrence J. Linck, Executive Director of the National Society for Crippled Children and Adults; Dr. Carl M. Peterson, Secretary of the Council on Industrial Health of the American Medical Association; Mr. Michael J. Shortley, Director of the Office of Vocational Rehabilitation; and Dr. Alfred R. Shands, Jr., Medical Director of the Alfred I. du Pont Institute.

Medical Adviser on Rehabilitation Appointed in Montreal

Announcement is made of the appointment to the staff of the International Labor Office, Montreal, of Mr. H. A. de Boer as Medical Adviser on Rehabilitation. Mr. de Boer has previously served as Medi-

cal Referee to the State Insurance Bank of the Netherlands, which administers the national workmen's compensation program. In his new post it will be his duty to study all new developments in the methods and organization of the medical rehabilitation of the handicapped, and the liaison of medical rehabilitation with training and employment services.

Veterans Hospital Hines, Illinois, in Urgent Need of Personnel Trained in Physical Medicine

Due to the rapid expansion of the Veterans Administration Hospital at Hines, Illinois, and especially of the Physical Medicine Service, there is an immediate need for physicians trained in Physical Medicine, and also for additional Physical Therapy technicians, who are graduates of Approved Schools.

Those interested, please call in person, if possible, to see the Personnel Officer (no interview on Saturday afternoons), otherwise write direct to the Personnel Officer, Veterans Administration Hospital, Hines, Illinois.

Jacob Edward Meisenbach

We regret to announce the death of Dr. Jacob E. Meisenbach of Staplehurst, Nebraska. Dr. Meisenbach was one of the pioneer members of the Congress. He received his medical training at the University of Nebraska College of Medicine.



BOOK REVIEWS

A TEXTBOOK OF SURGERY. By *John Homan* M.D., Clinical Professor of Surgery, Emeritus. Compiled from lectures and other writings of members of the Surgical Department of the Harvard Medical School. Sixth edition. Fabrikoid. Price, \$8.00. Pp. 1278, with 530 illustrations. Springfield, Illinois: Charles C. Thomas, 1945.

This new edition should help maintain the outstanding reputation of Homan's textbook. Although 188 pages have been rewritten, the appearance is unaltered, as this has been done by changes of lines in such a way that the pagination is identical with earlier editions, and the illustrations are for the most part the same. This text is written for medical students and is ideally suited for this purpose. The style of writing makes for surprising ease of reading for presentation of factual material. Practical aspects of clinical examination and diagnosis are stressed with a minimum of theoretical discussion. A bibliographic index is included in which are listed classical papers of historical interest. Those interested in Physical Medicine will be disappointed by the brief and rather archaic way in which this subject is covered. Aside from this objection, the book is thoroughly recommended.

SURGICAL TREATMENT OF THE NERVOUS SYSTEM. Supervising Editor: *Frederic W. Bancroft*, A.B., M.D., F.A.C.S., Associate Clinical Professor of Surgery, Columbia University; Attending Surgeon, New York City and Beth David Hospitals. Associate Editor: *Cobb Pilcher*, M.D., F.A.C.S., Associate Professor of Surgery, Vanderbilt University School of Medicine; Visiting Surgeon, Vanderbilt University Hospital. Fabrikoid. Price, \$18.00. Pp. 534, with 293 illustrations and 5 color plates. Philadelphia, London and Montreal: J. B. Lippincott Company, 1946.

This is the third volume on surgical treatment of this series, the first two being devoted to the motor-skeletal system. The present book has contributions from seventeen different authors with established reputations in the field, so that this is truly an authoritative work. There are seven sections, the first three dealing with the various types of intracranial disorders; the fourth, fifth and sixth cover the subjects of the spinal cord, peripheral nerves and sympathetic nervous system, respectively; and the last chapter is concerned with the newer developments in chemotherapy.

As an introductory chapter Pilcher has set forth the general principles of neurosurgical technique. This is further developed in the individual sections, often with considerable detail. There are numerous excellent illustrations, including photographs, line drawings and color plates. To

aid the reader in further study selected references are included with each chapter. The type, paper and generous size of figures are unusually attractive. This should be considered in a class by itself as an authoritative reference for the surgeon interested in neurological cases as well as the specialist. After-care and rehabilitation are either completely omitted or occasionally and only briefly mentioned, so that the book will appeal more to the surgeon than the neurologist or specialist in Physical Medicine.

SKIN DISEASES IN CHILDREN. By *George M. MacKee*, M.D., Professor of Clinical Dermatology and Syphilology, New York Post Graduate Medical School, Columbia University, New York; and *Anthony C. Cipollaro*, M.D., Associate in Dermatology and Syphilology, New York Post Graduate Medical School, Columbia University, New York. Second edition. Cloth. Price, \$7.50. Pp. 448, with 225 illustrations. New York and London: Paul B. Hoeber, Inc., Medical Book Dept. of Harper & Bros., 1946.

This new enlarged edition brings up to date the material about the dermatoses of infancy and childhood. New chapters have been contributed by Frances Pascher on Allergic dermatoses in children, Congenital cutaneous anomalies by Eugene F. Traub, contagious diseases by Nathan Sobel and syphilis in children by Herman Beerman. The book is conveniently divided into chapters describing the diseases caused by various factors such as bacteria, fungi, parasites, drugs and physical agents. Chapters on the eczema and erythema group of disorders are thoroughly covered.

The authors have succeeded in presenting a clear and concise volume on this subject. They have avoided many of the complex terms and discussion of the controversial etiological factors. Treatment is confined to the accepted means and includes the use of the latest drugs and other agents. Both authors by their thorough knowledge and experience in physical medicine suggest the various physical modalities if and when indicated. The book is printed on good paper which is a relief from what has been produced during the past few years. The illustrations are sufficiently numerous and well chosen to be helpful, however a minor fault is the use of disks over the eyes in an attempted means to avoid identification. There is little justification for this practice in this volume or in most publications as a matter of fact. The book can be highly recommended not only to the pediatrician and dermatologist but to the general practitioner.

AMPUTATION PROSTHESIS. ANATOMIC AND PHYSIOLOGIC CONSIDERATIONS WITH PRINCIPLES OF ALIGNMENT AND FITTING DESIGNED FOR THE SURGEON AND LIMB MANUFACTURER. By *Altha Thomas, M.D., F.A.C.S.*, Associate Professor of Surgery (Orthopedics), University of Colorado School of Medicine; and *Chester C. Haddan*, President of the Association of Limb Manufacturers of America. Cloth. Price, \$8.00. Pp. 305 with 207 illustrations. Philadelphia: J. B. Lippincott Company, 1945.

War has always been a stimulus for increasing medical knowledge. Knowledge of agents and technics applicable to the wounded soldier is rapidly augmented under the pressure of war. The use of these agents and technics, however, is not limited to military medicine.

This book brings under one cover the experience of leaders in the field of orthopedic surgery and limb making. It is aimed at bringing about better results for the amputee by describing the most suitable amputation for a given case, describing the prosthesis that is applicable, teaching the amputee the use of it and helping him in his emotional adjustment to his situation.

The annual number of cases needing prosthesis from civilian life is greater than from the military even during war time. This fact is not neglected and ample time is spent in consideration of the problems of children and women where the cosmetic effect, especially of the lower limb, is of great importance.

This book should be useful not only to the orthopedic surgeon and the prosthesis maker but also to the physical medicine physician, the psychiatrist, the occupational therapist and the physical therapist all of whom require a better understanding of the amputee and his problem.

MASTERING YOUR NERVES. HOW TO RELAX THROUGH ACTION. By *Larry Freeman* and *Edith M. Stern*. Cloth. Price, \$2.00. Pp. 247. New York: Harper & Brothers, 1946.

Larry Freeman is professor of psychology at Northwestern University and Edith Stern is a well known writer who has specialized in the popularization of psychologic and psychiatric material. This book shows the average person how he can learn to live with his nerves and control his nervous tension in the way best suited to him. It is divided into three parts, the whys, the hows and the pattern of activity.

Practically everyone is nervous. There are plenty of men and women who are apparently calm, self-contained, poised and unruffled. But the grim joke of this is that people like this are only fooling themselves and the public. Nervousness is something far more fundamental than fidgety behavior; it is unreleased nervous tension. In "calm" people nervousness is like dammed water, and though we may never have seen any break in their perfect behavior, the stream of their aroused energies is accumulating daily.

Other folks are obviously nervous. They chatter a blue streak or they move their hands continually or they chain smoke or they have palpitations or they have "habit spasms" or from time to time they go on alcoholic binges.

Socially the people who "control" their nervousness and act with self-restraint are much more pleasant and acceptable than the wigglers. But from the standpoint of health too much emphasis is placed on the virtue of putting up a front. Actually the "calm" and the "nervous" acting people may be equally nervous. They simply use different ways of discharging the nervous excitement. Some outlets of nervous tension are unmistakable. Other outlets have no surface relation to nervous tension. Often physicians interested in physical medicine see these physical symptoms. This is a book which can be recommended to their patients. It will help them to find out what type they are and when they understand themselves more fully, it will show them how to work better, to play with more enjoyment and to live with greater satisfaction.

ESSENTIALS OF HISTOLOGY. By *Margaret M. Hoskins, Ph.D.*, and *Gerrit Bevelander, Ph.D.* Cloth. Price, \$3.50. Pp. 240, with 137 illustrations. St. Louis: C. V. Mosby Company, 1945.

This is a brief, elementary presentation of the subject of histology and organology. The text is suitably illustrated with drawings from both human and animal sources. The book could serve as a review for medical students or as a text for undergraduate students.

PSYCHOLOGY FOR NURSES. DESIGNED AND WRITTEN FOR STUDENT NURSES. By *Bess V. Cunningham, Ph.H.*, Professor of Education, University of Toledo, Toledo, Ohio. Cloth. Price, \$3.00. Pp. 336, with 50 illustrations. New York and London: D. Appleton-Century Company, 1946.

Although the book is written primarily for student nurses, it should be valuable to any group of students. The author has an excellent understanding of the nurse and explains various phases of psychology so as to be applicable to this profession. The text is clearly written with the emphasis on practicability. A feature of the book which should stimulate interest in the subject and make for easy studying is the use of the following items after each chapter: "suggested activities, group activities, suggested readings and summaries." This volume even if not used as a textbook could be recommended as worth while reading for a student nurse or any young person who contemplates studying nursing.

PUBLICATIONS OF THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, INC., FOR PROFESSIONAL WORKERS IN THE HEALTH FIELD.

Number 23. — Use of the Respirator in Poliomyelitis. Revised, 1945. By *James L. Wilson, M.D.*

Technical advice for physicians. Indicates types of cases in which respirator treatment is beneficial; when to initiate and when to cease use; importance of early diagnosis of weakness of muscles of respiration; care of patient while in respirator; mechanics of machine; dangers.

Number 24C. — Respirators. Locations and Owners. Pp. 28, 1945.

Lists by states and counties the locations and owners of adult cabinet-type respirators approved by the Council on Physical Medicine of the American Medical Association. A useful guide during an epidemic or for those contemplating the purchase of an "iron lung." Foreword points out that the National Foundation loans adult respirators under certain conditions.

Number 45. — *A Guide for Nurses*. Revised, 1945.

Describes in detail the nursing care of patients with infantile paralysis, including diagrams which illustrate the cutting and folding of packs.

Number 49. — *The Nursing Care of the Patient in the Respirator*. By *Carmelita Calderwood*, R.N. Pp. 24, illustrated, 1944.

This pamphlet, written expressly for nurses, describes the nursing techniques involved in the care of the respirator patient. It also includes instructions for the operation of types of approved respirators.

Number 56B. — *Serving the Community in an Infantile Paralysis Epidemic*. Pp. 6, 1945.

Folder outlining Chapter service.

Number 59. — *Facts and Figures About Infantile Paralysis, 1945*. Statistical charts and tables for physicians, health workers and centers where students are being prepared for a career in medicine, public health, bacteriology, nursing, physical therapy, medical social work and allied fields. Individual charts in size 17 inches by 22 inches available for display purposes.

TRENDS IN MENTAL DISEASE. A Publication. Price, \$2.00. Pp. 120, tables, charts. Paper. Printed by Photo-offset. New York, N. Y.: King's Crown Press, 1945.

This small pamphlet contains six very short articles by various authors and an introduction which takes up 11 of the 114 pages. Two articles are not concerned with the title of the pamphlet. The material is printed by what is termed "photo offset" which is merely a miniature reproduction of ordinary mimeograph sheets. It is an affront to the publisher to comment on the fly leaf that "King's Crown Press is organized for the purpose of making certain scholarly material available at minimum cost." At a price of \$2.00 for so small an effort the publisher may be attempting to discourage the sale which is justifiable or perhaps he is merely trying to be facetious.

HEALTH INSTRUCTION YEARBOOK, 1945. Compiled by *Oliver E. Byrd*, Ed.D., Associate Professor of Hygiene, School of Health, Stanford University. Cloth. Pp. 344. Price, \$3.00. Stanford University. Stanford University Press, 1945.

This book represents a selection of 316 abstracts from the literature of the year of interest to school-health educators, nurses, public-health educators and students. The aspects covered include social problems, nutrition, exercise, fatigue, mental health, heredity, resistance to infection, habit-forming substances, health services and other related subjects. The abstracts are presented clearly and concisely in easily readable print. This collection of current scientific material is of un-

doubted value and interest to a certain group of readers. It is suggested, however, that some editorial comment on certain of the research reports of unproven value and in the case of controversial topics would increase the usefulness of the publication.

SYNOPSIS OF PHYSIOLOGY. By *Roland J. Main*, Ph.D., Professor of Physiology, Medical College of Virginia. Cloth. Pp. 341, illustrated. Price, \$3.50. St. Louis: The C. V. Mosby Company, 1946.

This is a small handbook written to aid physicians and senior medical students in reviewing physiology. The subject matter is divided into nine chapters dealing with: (1) general properties of protoplasm and cells; (2) adaptation to environment and homeostasis of the body; (3) circulation; (4) respiration; (5) digestion; (6) nervous system; (7) sensation; (8) endocrines; (9) physiology of miscellaneous systems, functions and organs. To secure briefness the author has assumed a very dogmatic style with no reference to laboratory basis of statements. Controversial subjects are in general omitted and there is no bibliography. The busy practitioner might find this a convenient quick reference and it may also serve as a useful reference for physical therapy students. In reviewing for examinations it can also help the senior medical students who already have had training in the subject. It is not recommended for the beginning student or those interested in research.

SYNOPSIS OF PATHOLOGY. *W. A. D. Anderson*, M.A., M.D., F.A.C.S., Professor of Pathology and Bacteriology, Marquette University School of Medicine; Pathologist, St. Joseph's Hospital, Milwaukee, Wisconsin; Formerly Associate Professor of Pathology, St. Louis University School of Medicine. Cloth. Pp. 722, 327 illustrations and 15 color plates. Second Edition. Price, \$6.00. St. Louis: C. V. Mosby Company, 1946.

Every chapter in the book has been revised, and seventy-four new illustrations and four new color plates have been added. In step with current interest, greater emphasis has been given to "tropical diseases" and conditions important in "war medicine." The chapters dealing with viral, rickettsial, spirochetal, mycotic, protozoal and helminthic infections have been enlarged and other subjects, such as epidemic hematitis and blast injuries have been given attention. Other chapters that have received extensive revision deal with inflammation, the lung and the nervous system.

The aim of the volume is to serve as a gap between the elementary manuals of pathology and the larger textbooks and reference works. By the presentation of pathology in a compact and condensed form, it is designed to be useful to the medical student and to the clinician who must maintain familiarity with the foundation sciences of medical practice.

Of especial interest is the manner of listing

references at the close of each chapter. These references are divided by center headings indicating the main topics covered in that particular chapter.

HACKH'S CHEMICAL DICTIONARY (American and British Usage). Containing the Words Generally Used in Chemistry, and Many of the Terms Used in the Related Sciences of Physics, Astrophysics, Mineralogy, Pharmacy, Agriculure, Biology, Medicine, Engineering, etc. Based on Recent Chemical Literature with Numerous Tables, Diagrams, Portraits and Other Illustrations. Completely Revised and Edited by *Julius Grant, M.Sc., Ph.D., F.R.I.C.* Third Edition. Pp. 925 with 217 illustrations. Price, \$8.50. Philadelphia and Toronto: The Blakiston Company, 1946.

Hackh's Chemical Dictionary has become the standard one-volume reference book to all of modern chemistry, including collateral vocabularies of physics, astrophysics, geology, mineralogy, botany, zoology, medicine, pharmacy and the pertinent jargon of industry, mining and commerce. The book contains more than 57,000 entries, mostly encyclopedic in character, giving lucid definitions of each subject in the light of new research findings and current acceptations. Nomenclature and spelling follow the system adopted by the American Chemical Society and British practices. Derivatives of organic compounds are listed for convenience under the parent compound. Some complex organic compounds with trade names are listed under their full chemical names. Compounds are listed and described in systematic order which includes name, formula, molecular weight, synonyms, occurrence, preparation or type of substance, appearance, density, melting point, boiling-point, solubility in water, alcohol or ether, chemical industrial and medical uses. It is a single volume less than one and one-half inches thick, convenient to handle and sturdily bound for hard service. A feature of the dictionary is the numerous original tables of important data, diagrams, portraits, illustrations and other well delineated aids to a clear understanding of the subject. The various chain reactions are illustrated by formulas, and the Periodic Chain is fully tabulated, including complete scientific data down to element 94. The latest data on Atomic Disintegration is included together with brief, clear statements of the theories, laws and rules of chemistry, accurate descriptions of elements, compounds, drugs, minerals, vegetable and animal products, chemical apparatus, equipment and biographic sketches of scientists who have contributed to the development and progress of chemistry.

PHYSICIAN'S HANDBOOK. By *John Warrentin, Ph.D., M.D., and Jack D. Lange, M.S., M.D.* Third Edition. Paper. Pp. 282. Price, \$1.50. Chicago: University Medical Publishers, 1944.

This is a truly pocket-size book containing in outline and tabular form a collection of medical facts for the use of house officers. The first part

describes methods of laboratory diagnosis including technical details. Various clinical procedures are outlined in the second part, such as history and physical examination, pre-and post-operative orders, various diets, use of drugs, facts about anesthesia, hormones, and miscellaneous subjects. Another important part of the book consists in tables of data such as normal blood analysis, average weights and sizes of the body and organs, incubation and quarantine periods, and many other useful bits of information. No instructions are included concerning physical medicine. Internes should find this a convenient pocket reference for everyday use.

JOB PLACEMENT OF THE PHYSICALLY HANDICAPPED. By *Clark D. Bridges, Director of Conservation Services, Zurich Insurance Companies, Chicago, Illinois.* Cloth. Pp. 329. Price, \$3.50. New York: McGraw-Hill Book Company, 1946.

An important corollary of the problem of aiding disabled people to become self-supporting concerns the training of lay persons to perform this important task successfully. It is generally recognized that to serve competently the best interests of all concerned, the vocational counsellor needs to be well informed on at least the nature of human disablements and their effect on capacity to work, the physical demands of jobs, and the availability and proper use of community resources for objective appraisal of disabled persons and jobs, as well as facilities for preparing the disabled for work. To those concerned with the formidable task of orienting and training vocational counsellors, Mr. Bridges' book will be a boon in the form of a much needed handbook which, in the opinion of the reviewer, covers the subject adequately, yet clearly and succinctly.

The text furnishes factual information on handicaps to employment, the principles and methods of rehabilitation, employment of the disabled, appraisal of the job, appraisal of the worker and specific disabilities. It is supplemented by eight appendices on topics pertinent to the subject and an adequate bibliography.

The major portion of the text is devoted to clear and understandable descriptions of the basic anatomical, physiologic and placement considerations of disabilities involving the eyes, the ears, the skeletal system and skin, the respiratory system, the circulatory system, the gastrointestinal system, the genitourinary system, the nervous system and the endocrine system. This chapter will be most helpful to lay persons concerned with placement of the disabled. Due attention is accorded to the point of view of Industrial Hygiene.

The method proposed for matching the worker and the job is based on simplification and refinement of job and worker appraisal technic and appears to be worthy of general application.

Study of this text by those persons concerned with the placement of disabled people should have a salutary effect on the quality of their efforts. It should also be useful in the dissipation of employer resistance to hiring disabled employees.

PHYSICAL MEDICINE ABSTRACTS

The Effect of Electrical Stimulation Upon the Course of Atrophy and Recovery of the Gastrocnemius of the Rat. A. J. Kosman; S. L. Osborne, and A. C. Ivy.

Am. J. Physiol. 145:451 (Feb. 1) 1946.

When the sciatic nerve is crushed bilaterally under identical conditions the loss of weight and tension for both right and left gastrocnemii are approximately equal.

Loss of tension occurs at a more rapid rate and to a greater extent than weight loss. Conversely, tension returns more rapidly as the nerve regenerates.

Appropriate electrical stimulation of the gastrocnemius muscle of the rat results in a heavier and stronger muscle both during the period of denervation and recovery.

Appropriate electrical stimulation when started after re-innervation has occurred is without effect upon the subsequent course of recovery.

Physical Rehabilitation After Injury to the Spinal Cord: Report of Case With Details of Procedures. Earl C. Elkins.

Proc. Staff Meet., Mayo Clin. 21:97 (Mar. 6) 1946.

Before measures are used to rehabilitate patients who have disabilities of this nature the height of the lesion, decubital ulcers and spasticity are considered carefully.

When only the muscles of the arms and shoulders function normally and those of the trunk function little, if at all, it is difficult to brace the patient so that he can walk. Strengthening of arm, hand and shoulder muscles may enable such a patient to assist in hoisting himself out of bed to a wheel chair and back again, to push the wheel chair around and to get onto the toilet stool from a wheel chair with little help. Patients who have good muscles in the arms, shoulders and back and good posterior abdominal muscles, particularly the quadratus lumborum, although they may not have use of the remainder of the abdominal muscles, can be taught to walk fairly well with the use of crutches.

Simple reconditioning exercises are used at first for a few moments twice a day. This period is increased gradually to two to five hours a day and the strenuousness of the exercise also is increased gradually. First, patients are taught to roll from side to side. Then arm strengthening exercises are given; exercises against resistance by means of weights on pulleys and stall bars are

employed. When sufficient strength has been recovered, the patient attempts to raise his trunk from a prone position to a crawling position and then to crawl by shrugging the hips forward in order to develop the lateral abdominal and quadratus lumborum muscles. These muscles are necessary for walking. Crutches that are shortened to almost one-half length then are used by the patient while he is in the sitting position with legs extended on a mat. He is taught to raise the weight of the trunk with his arms and to shrug the hips and push the legs forward of backward. The exercise further develops ability to shrug the hips. This training accustoms the patient to the crutches, teaches him how to place them and how to turn on them without any danger of falling. When sufficient strength has been developed, the patient practices rising from a supine to a sitting position.

Rehabilitation of a patient, who has been confined to bed, to the extent that he can walk across streets requires hours of hard work and patience on the part of those entrusted with the training involved and includes hours of hard work and fortitude on the part of the patient. Those treating him must have special knowledge of the function of muscles and exercise. The patient cannot be handed a pair of crutches and braces and be told to walk. Neither is it possible to instruct the family or the parents of the patient in two or three hours and expect them to accomplish much at home. The total time required to make these patients relatively more independent is not too great after their physical condition reaches the stage at which training can be started. The patient presented was walking fairly well at the end of eight weeks and was under treatment approximately eleven weeks. If at the end of three to four weeks, a patient has not made progress, treatment is not continued further. However, if similar results can be obtained with patients of equal disability, the time spent is justified.

Repair of Soft-Tissue War Wounds. Benjamin W. Rawles.

Ann. Surg. 123:219 (Feb.) 1946.

The lightly wounded form a valuable potential reserve for the Army, and if the greatest possible number are to be salvaged for further duty, rehabilitation requires careful attention. The further a soldier is evacuated from the front and the longer he is away, the more difficult it is to return him to duty. Lightly wounded casualties are not evacuated any further to the rear than is compatible with adequate treatment and the tactical situation. In the general hospital in the

base, efforts are directed towards weaning the patient from crutches and cane and from an inside hospital bed as rapidly as his condition will warrant. He is required to wear his combat shoes instead of slippers as soon as possible, as they apparently greatly aid in his rehabilitation by giving his feet proper support. Special attention is paid to the conditioning of quadriceps muscles because of the disability that results from disuse atrophy. This is particularly a problem when the wounds involve only one extremity. Natural favoring of the part causes the patient to limp, which increases the atrophy of the muscle. The atrophy further exaggerates the limp and the more he limps the greater the atrophy becomes. This vicious circle is sometimes difficult to break. He is moved to a ward tent where he sleeps on a cot as soon as his wounds do not demand active attention. This is usually between two or three weeks after injury in the more lightly wounded. This move is deliberately made as a part of mental reconditioning that is often necessary for return to duty even though sufficient inside beds may be available. If a patient spends his entire period of convalescence in one place, he is apt not to be keenly conscious of the improvement he has made. This procedure also allows the more recently injured casualties who require active therapy to be concentrated in one place. When he is a little stronger, he is evacuated to the convalescent section of the hospital, where he hikes, drills, takes calisthenics, participates in athletic contests and performs other duties about the hospital on a graded basis depending on his physical condition.

The Therapeutic Value of Early Physical Activity in Rheumatic Fever. Preliminary Report. Harold F. Robertson; Ralph E. Schmidt, and William Feiring.

Am. J. M. Sc. 211:73 (Jan.) 1946.

This paper is a preliminary report of observations made on 200 patients on whom the diagnosis of acute rheumatic fever was made by the clinical and laboratory criteria recommended by the Army Air Forces. From this study we have been impressed by two things: first, the high incidence of anxiety neuroses, often to a disabling degree; and second, the fact that prolonged bed rest was not necessary for an uncomplicated rapid recovery. Furthermore, early ambulation has greatly reduced the incidence and severity of the anxiety neuroses. The usual clinical and laboratory criteria for judging activity of the disease were not regarded as contraindications for starting early ambulation — the patient's physical comfort was the determining factor. Four case reports are included which illustrate our present program.

The authors recognize that this study does not warrant any dogmatic conclusions at this time. nor do they advocate indiscriminate physical activity. Nevertheless, it does invite attention to re-evaluation of the currently accepted policy of prolonged bed

rest, with its disadvantages, in the treatment of acute rheumatic fever.

Spontaneous Recovery of Muscle Following Partial Denervation. Paul Weiss, and Mac V. Edds, Jr.

Am. J. Physiol. 145:606 (Feb. 1) 1946.

Incomplete denervation of muscles in the rat was found to be followed by "spontaneous" recovery not attributable to regeneration of the severed nerve fibers. This recovery was studied quantitatively by following the weight, strength and histologic changes in the muscles and comparing them with the residual nerve supply.

From the knowledge of the size of the denervated fraction and of the amount of atrophy following total denervation, the expected weights of muscles partially denervated for various periods could be computed. Except for the first week, the weights actually observed were much higher than calculated, that is, the denervated portion of a partially intact muscle atrophies less than it would if the muscle were completely denervated. Within a few weeks, atrophy is checked and the muscle gradually returns to nearly its original size.

Histologic study showed a progressively increasing number of muscle fibers recovering normal size after some initial atrophy. Four months after the denervation of 80 per cent of the muscle fibers, only 5 per cent were still in an atrophic (i. e., denervated) state. At no time was there evidence of hypertrophied fibers.

All observed facts lead to the conclusion that the intramuscular branches of the intact motor nerve fibers undergo additional branching and take over the supply of the denervated muscle fibers. This occurs only when intact and denervated elements lie intermingled; the stimulus for branching lies presumably in some traumatic contact action, and no "neurotropic" stimulation of branching or "attraction" of branches toward a solid denervated area has been noted.

The results suggest that similar compensatory branching with consequent improvement of muscle weight and strength might occur after diffuse poliomyelitic lesions, but not after partial traumatic injury.

Rehabilitation of the Disabled — A Sociological Study. Alexander Miller.

Brit. J. Phys. Med. 9:7 (Jan.-Feb.) 1946.

Rehabilitation of the injured is not so much a method of treatment as a concept of treatment. It is an attitude of mind which is concerned with the surgical, psychologic and sociologic welfare of workers in industry.

The first essential step is to establish a sufficient number of traumatic centers for the segre-

gation and treatment of the injured under unity of control. The staff of such centers should take an active part in all stages of rehabilitation of the patient. Rehabilitation is a continuous process beginning at the moment of injury. It entails a close contact between workshop and hospital.

Facilities for rehabilitation are required in every fracture department. Patients who need prolonged in-patient supervision should be transferred to a residential rehabilitation center in fresh air and country surroundings. For certain ambulant patients there is scope for the development of special daily centers, placed in industrial areas chosen for their accessibility, in which provision can be made for treatment on the principle of an eight hour day. Such centers would provide meals and permit patients to return to their homes each night.

It is perhaps debatable whether or not special industries should have special rehabilitation centers, but there is ample justification for this in the final stages of treatment, as the requirements of industries may differ in regard to the hardening process immediately before the patients return to work.

Treatment entails a knowledge of the mental attitude of the disabled as well as of the physical handicap.

Artificial Respiration. Julius H. Comroe, Jr., and Robert D. Dripps.

J. A. M. A. 130:383 (Feb. 16) 1946.

The data obtained show the complete inadequacy of the Schafer method. The tidal air produced by the Schafer technic varied from 71.5 to 117 cc. (normal is 400 to 500 cc.) despite the fact that the motions used conformed closely to the approved technic. Two different operators (both experienced) were used, each weighing approximately 180 pounds. It is instructive to note that prone pressure applied to C. M. at a time when he was lying on a thin mattress produced only 75 cc. per cycle as compared with 117 cc. when the mattress was removed leaving only a hard plywood tilt table; too often artificial respiration is given to a mattress rather than to the patient.

On the other hand, the Eve tilting or gravity technic (with the patient tilted through an angle of 45 degrees in each direction) produced an adequate exchange of 286 to 500 cc. per cycle. No comparison of possible beneficial effects on circulation of the two methods was possible in this study.

These studies emphasize that artificial respiration, to be maximally effective, must not only raise blood oxygen to normal levels but must reduce blood carbon dioxide to normal levels. The original oxygen insufflation technic provides adequate oxygen but permits accumulation of narcotic concentrations of carbon dioxide; consequently it should not be employed for more than a few minutes without additional rhythmic manual compression of the chest. Tingley's plea for

a much faster rate in artificial respiration for asphyxiated patients is probably justified; we do not believe that these unconscious patients require excessive amounts of oxygen, but it certainly is essential to reduce carbon dioxide to normal levels. There is no doubt that low levels of blood carbon dioxide may be harmful because of the resultant cerebral vasoconstriction, however, it is unlikely that any existing method of manual artificial respiration could produce enough hyperventilation in fifteen minutes to do harm. Excessive hyperventilation may, of course, result from the improper use of mechanical resuscitators.

Infectious Polyneuritis (Guillain-Barre Syndrome). Roscoe L. Pullen.

Am. J. M. Sc. 211:118 (Jan.) 1946.

Treatment is supportive and symptomatic. In view of the fact that this entity is self-limited and accompanied by a high degree of recovery, it is difficult to evaluate any form of treatment. In the early phases of the illness, attention should be directed toward the alleviation of pain and the maintenance of adequate fluid intake and nutrition. Nursing care is especially important, particularly for those in whom involvement of the rectal or vesical sphincters has occurred as well as for those with respiratory difficulties. Occasionally use of the Drinker respirator as well as repeated aspiration of mucus from the respiratory passage is indicated. Reassurance and the maintenance of morale becomes an important duty to the attending physician. Protective splints should be applied to prevent any undue contraction or elongation of parietic muscles. As the acute stages pass, physical therapy in the form of active and passive exercises, hydrotherapy and massage should be instituted. The Kenny method has been employed by several investigators without any conclusive results.

Refrigeration for Crushed Finger. Lyman Weeks Crossman.

J. A. M. A. 130:667 (March 9) 1946.

An adverse reply is given to a navy lieutenant who inquired concerning his application of ice to a finger which had been crushed and nearly amputated. The theory contained in the reply seems fallacious, as cold preserves tissue by reducing its metabolism and diminishing the need for either arterial or venous circulation. It is also contrary to the unanimous experience in major surgery, such as the English adoption of refrigeration for crush injury of limbs, and the preservation of circulation or development of collateral circulation during weeks of icing. Two minor cases which have been successful are described.

An Italian laborer aged 64 had his thumb nearly severed at the interphalangeal joint, the distal phalanx hanging only by a thin shred of skin. The physician who saw him inquired if he should

complete the amputation, but he was advised to place the hand in a basin of cracked ice. Four hours later the parts were united by suture without drainage. The thumb was kept in ice for twenty-four hours and then changed to ice bags, which were gradually withdrawn during four days. The result was a complete functional thumb except for ankylosis of the interphalangeal joint.

A girl aged 5 years had her left ring finger chopped off with a hatchet. The cut was through the middle phalanx, and here also nothing but a thin bridge of skin remained. When first seen six hours after the accident, the severed part appeared very cyanotic and cadaveric. After suture, the finger was packed in ice for thirty-six hours by a unique method. The mother cut a hole in a rubber fountain syringe, so that the child's hand could be inserted and surrounded with ice, while the melting water drained out through the tubing into a pail on the floor. During the following days the important principle of gradual elevation of temperature was applied by using ice bags which were successively withdrawn. The outcome has been a perfect finger except for limitation of motion in the distal phalanx, which observers expect to be lessened by exercise and time.

Effect of Postoperative Exercises and Massage on Incidence of Pulmonary Embolism at Chelsea Hospital for Women. J. P. Erskine, and I. C. Shires.

J. Obst. & Gynaec. Brit. Emp. 52:417 (Oct.) 1945.

At the beginning of 1937 a massage department was established at the Chelsea Hospital for Women. The members of the massage team were to instruct and supervise postoperative exercises and to carry out massage in all cases after abdominal operations and operations for the repair of genital prolapse. The incidence of fatal embolism decreased by more than 50 per cent during the seven year period subsequent to the introduction of the massage and exercise procedure.

Nonperforating Cyclodiathermy for the Treatment of Glaucoma. Frank C. Lutman.

Am. J. Ophth. 29:184 (Feb.) 1946.

In every instance where cyclodiathermy is contemplated one should not minimize the damage to the integrity of the eyeball, the unpredictable severity and frequently prolonged period of the postoperative uveitis, nor the uncertainty of a permanent control of the glaucoma. The operation is particularly suited to glaucoma when iris vascularization precludes surgery on the iris, and to glaucoma secondary to central venous thrombosis. In the latter group, tension was not always controlled, but pain was relieved.

Cyclodiathermy may be chosen as an operative procedure for some desperate cases, wherein al-

ready proved treatments for glaucoma have failed. It can be recommended in hopeless cases for the relief of glaucomatous pain in preference to enucleation, retrobulbar injection of alcohol, or to the X-ray.

The Value of Massage in Rheumatoid Arthritis. Frank Hopkins.

Virginia M. Monthly 73:62 (Feb.) 1946.

The myositis that accompanies chronic rheumatism and chronic gout is characterized by a generous cellular exudate which soon produces induration and requires much treatment for its dissipation; on the contrary, in the myositis of rheumatoid arthritis, there is a more or less non-cellular exudate, which is circumscribed and more easily dissipated. The muscles seem especially sensitive and with the slightest infiltration are subject to painful spasm. Pain is a great factor and probably the greatest factor in undermining the patient's health and morale. Skillful and understanding massage will keep the pain in abeyance and thereby add the greatest boon to the patient's welfare.

As long as general massage is ordered by the physician without specific instructions to the operator relative to the pathology, massage will not have the place that it deserves. If any muscle is found acutely inflamed, massage is postponed and moist heat is applied. The form of massage used to dissipate the infiltrated areas is classified as friction or pressing and consists of the use of the tips of the three middle fingers or thumb, making gradually increasing pressure and applying circular movement. This is kept up until the operator feels the tissues give or relax, which means the treatment is effective. Whether the operation is to be carried further at this seance will depend on the judgment of the operator. At this stage, it may be desirable to finish the treatment with effleurage and kneading.

Proper massage in rheumatoid arthritis will help to keep the muscles free of exudates and thereby lessen pain and help to prevent contractures and make for a longer life of activity and freedom from complete invalidism.

Surgical Management of Acute Arterial Occlusion. Gerald H. Pratt.

J. A. M. A. 130:830 (March 30) 1946.

One of the most common causes for the occlusion of the artery of the upper extremity is a scalenus anticus syndrome with or without cervical rib. This may cause a thrombosis of the subclavian artery with the symptoms of numbness, weakness, change of color, absence of the peripheral pulse and at times ulcers or even gangrene. When there is pressure on the brachial plexus, symptoms may be more neurologic. At such times the symptoms are of anesthesia and

paresthesia with tingling and pain, particularly on the ulnar nerve side of the hand. Treatment for this condition is scalenotomy with removal of any bony obstruction (if present), the rib being rongeured away.

When a foot is frostbitten, actual freezing of the tissues occurs. In the immersion or trench foot syndrome the foot does not actually freeze, but it becomes chilled, anesthetic and edematous. In trench foot, trauma from walking or standing on these injured feet is added.

When the part is warmed and the circulation is restored to these limbs, it rapidly warms the deep tissues, and the contiguous transmission of this heat to the damaged skin surface causes discoloration and bleb formation. The circulation in the skin has been more impaired by the cold, particularly the venous and lymphatic vessels, and it is unable to remove the increased arterial supply rapidly, and blebs and edema result. If continued, the skin breaks and death of the superficial tissues occurs with gangrene. This excessive vasodilatation of the part is probably due to the absorption of diseased tissue as the limb becomes warmer.

It was found early that patients themselves realized the danger of too rapid warming and return of circulation. The cooling or refrigeration treatment during this hyperemic stage consists in cooling, best applied by temperature controlled cradles or ice bags and electric fans. In one to six weeks this stage has subsided and the superficial tissues can again carry the circulation load.

Many have residual pain and stiffness of joints and unhealthy thin skin. Biopsies have shown that there is a subcutaneous fibrosis which causes the inability of the tendons to flex well. Collagen deposits around the nerve cause the pain. Physical therapy, high vitamin diets and encouragement help at this state.

Present Status of Electric Sleep Treatments. William Karlinger.

M. Rec. 159:89 (Feb.) 1946.

The various terms "electric shock," "electric-convulsion therapy," "electric-fit therapy," are misnomers because they have often a profound psychologic effect on the physician who refers a patient for treatment. He is reluctant or indecisive in sanctioning this form of treatment, if not actually critical of it. A similar effect is obviously produced on the patient's immediate family and it is therefore desirable and justifiable, before the patient is taken in hand, to withhold from both physician and patient certain facts relating to the contemplated therapy. In view of the aforesaid considerations, deem it is desirable and expedient to use the term "electric sleep treatment."

The electric sleep treatments may be given in the office or hospital two or three times a week,

usually for six to eight weeks. It is advisable to treat patients in the office and to hospitalize those who cannot be treated there, elderly patients, for example, or those who do not voluntarily submit to office treatment and those who should be hospitalized owing to their advanced morbid mental condition. Suicidal tendencies in depressed patients are not sufficient reason for admission to a hospital as long as they can be watched carefully and constantly. Treatment in the office avoids the social stigma involved in the admission to a hospital for mental patients and facilitates the readjustment to their environment by not being removed from a hospital.

Electric sleep treatment is a safe procedure. It should be administered only by a skilled psychiatrist. It should preferably be given in the office than in a hospital. The selection of the patient must be carried out carefully, especially with a view of excluding undesirables, clinically speaking, or "poor risks."

The Initiation of Sweating in Response to Heat. E. F. Adolph.

Am. J. Physiol. 145:715 (Mar. 1) 1946.

Rates of evaporative loss were measured in men initially exposed to hot dry air, 122 F., 10 per cent humidity. A probable increase in rate of evaporation due to sweating, amounting to 2½ fold, occurred within the 5 minutes before the men could be weighed. The measured acceleration began at 7 minutes in one subject and 12 minutes in another subject. The rates rapidly increased to a maximal rate of 10 fold above that in a cool atmosphere, which was attained in 20 minutes. It is concluded that the promptness of onset of sweating among individuals is no indication of their tolerances or acclimatization to heat. The slow onset of full sweating suggests that the stimulus required is an appreciable increase in the heat content of the body as a whole.

Surgical Treatment of Intractable Plantar Warts. J. A. Dickson.

Cleveland Clin. Quart. 13:92 (April) 1946.

The majority of plantar warts are successfully eradicated by conservative measures such as escharotic solutions, electrodesiccation, or irradiation in the form of roentgenotherapy. Comparable results are obtained by each of the above methods, 60 per cent to 90 per cent cures. Escharotics are reserved for the simple cases and electrodesiccation and irradiation are employed when local application of these substances fails. If a single method is desired, the selection would undoubtedly be roentgenotherapy, for this treatment is painless, short, successful and safe, provided the treatment is administered with due respect to the tolerance dose.

It is recognized, however, that no matter how skillfully used, these methods fail in at least 10 per cent of cases. These intractable problems are not only distressing but often calamitous to the patient. After many years of therapy extremely painful ulceration on the plantar surface of the foot may still persist.

For this type of plantar wart the only resource is removal of the wart area in its entirety and while this in itself presents no difficulty, the restoration of the operative site to a painless weight-bearing area involves surgical problems.

The Remaining Task. Norman T. Kirk.

J. A. M. A. 130:920 (April 6) 1946.

The program for paraplegics concerns only a relatively small number of men, but to me it is a shining example not only of the professional competence of the physicians who served and are serving in the Army but even more of their humanity.

Until this program was instituted, men with spinal cord injuries and resulting paralysis were regarded as hopeless invalids, and I fear that they were treated as such. That attitude has been completely reversed by the Army Medical Corps, which met the problems of this injury with all the resources of the profession.

First, operation was performed promptly in all proved or suspected cases of spinal cord injury, chiefly because exploration proved to be the only sure way of determining whether or not the condition could be relieved surgically. Operation was also done promptly; in one reported series 57 per cent of the patients showed improvement when they were operated on within five days after their injuries, against only 10 per cent when operation had been deferred beyond this period.

The next phase of management, however, was chiefly urologic. No untrained attendant ever participated in the care of a paraplegic's bladder.

As to decubitus ulcers, patients who arrived in the Zone of the Interior with pressure areas properly protected seldom developed them here because every possible measure was employed to keep them free of this complication, frequent changes of position again being the most important part of the regimen.

Finally came the matter of ambulation. We did not deceive ourselves about that. Ambulation is beyond the capacity of all but a few paraplegics. But ambulation in the sense of getting about by braces and crutches sufficiently to care for themselves, is a definite possibility for most patients with cord lesions at or below the tenth dorsal vertebra and is a more guarded possibility for patients with lesions below the second dorsal vertebra. In lesions above that level ambulation is not possible, but a wheel-chair existence is.

In other words, so far as this program was concerned, a bed-ridden patient was simply not

conceived of. When a man reached a paraplegic center it was taken for granted that he would be out of bed promptly, or at least as soon as certain physical deficiencies had been corrected, and that he would attempt to walk with equal promptness.

There has been nothing like these results in the previous history of neurosurgery; they were achieved against untold odds. The urologic care of the paraplegic is a never ending struggle against infection. Instruction in ambulation is tedious and difficult for instructor as well as for instructed. The care of decubitus ulcers is often a loathsome task, and the details of their prevention are endless. But in these army centers these difficulties were overcome by the unified efforts of neurosurgeons, plastic surgeons, orthopedic surgeons, urologists, internists, nutritionists, nurses, dietitians, physical therapists and hospital corpsmen.

Use of Ionization in Checking Bleeding. F. Schütz.

Lancet 9:309 (March 2) 1946.

The liberation of metallic ions from the anode was found to affect blood coagulation. Fifteen different metals and several alloys were compared by applying equal current densities. Zinc ions caused a considerable acceleration in clotting near the anode and inhibition of clotting was observed near the cathode.

Only a weak electric current was used and no heating was caused. The application of the method to hemostasis in vivo has been examined by experiments on rats. The rats were anesthetized and the liver and kidneys were traumatized by cutting or crushing with forceps. Bleeding was profuse and 9 out of 12 animals died within forty-eight hours of this injury. In a second group of rats, with similar injuries, an electrode armed with a swab soaked in 0.5 per cent zinc sulphate solution and connected to the positive pole of a battery was placed on the injured surface; another electrode in a saline pad, connected to the negative pole, was placed on the skin of the back. A current of 20 milliamperes was applied for 1 to 2 minutes. No visible bleeding was seen after this procedure and all the animals made an uneventful recovery. Three of the livers, treated for the longest time (3 to 5 minutes) with the current, were removed sixteen days later. The injury had healed and organized fibrous tissue was found at the site of trauma. The adjacent liver-cells appeared to be normal in structure, staining reactions and glycogen content.

In cases of prostatectomy, the bladder was filled with 0.5 per cent zinc sulphate solution, and the positive pole was inserted half-way through a catheter, while the negative pole was applied in the form of diathermy pads on the patient's back. A current of 20 milliamperes was applied for 10 to 20 minutes. The results were encouraging and without any apparent ill effects.

The Weak Back. A. B. Walter.

Canad. M. A. J. 54:255 (March) 1946.

One type of chronic strain is worthy of separate identification; it is the cause of "postural back-ache" and is of psychic background with the asthenic posture as a physical expression. The trunk is allowed to slump habitually into the position of least effort, the abdominal wall is used unduly for respiratory excursion and its muscles are kept relaxed for this purpose; the slack rectus fails to hold up the pubic arm of the pelvis and lumbar lordosis, often betokened by a "sway back," is the result. A lowered threshold of capacity and undue tendency to lumbar strain is the outcome; this may be a source of pain from no more effort than walking, or still more from continued standing, and its diagnosis is apt to be overlooked because no localized tenderness is found in the back. Its distinction from other types of strain is important because while they are treated by rest this is amenable to treatment on opposite principles. Provided that the psyche is yet plastic, it entails correction of posture and of breathing habits, and retraining of the recti abdominis to properly elevate the pubic bones and lever back the lumbar spine into some semblance of straightness. For mechanical reasons such abdominal exercise should be given in the supine position.

Our present treatment of fibrositis consists in muscular relaxation by heat and rest in the acute stage, heat and directive massage in the chronic; and there seems little doubt that attainment of muscular fitness, whatever that is, increases the resistance of tissues to inroads of the disease.

The Copper Ionization Treatment of Fungous Infections. William J. Lahey, and James E. Byrnes.

U. S. Nav. M. Bull. 46:557 (April) 1946.

Patients with moderate to severe involvement of the feet and/or hands were treated. The types of infection handled were two: the common interdigital, with and without extension and the dyshydrotic or thick-walled blister types. Cases with secondary infection are not included. All but two cases were managed as outpatients.

No reactions ascribable to copper sensitivity were encountered. Several patients initially developed transient follicular rashes at the points of application of the indifferent electrodes, but these in no case persisted or recurred.

The experience of the author indicates that the copper ionization bath is a safe and valuable method of treatment of fungous infection of the types described. An appreciable number of cases showed persistent scaling or fissuring of the skin despite disappearance of all acute signs. These required the supplementary use of keratolytic agents to complete the healing process. The

method possesses certain advantages over the usual forms of therapy. Chronic cases are generally benefited. The procedure is simple and uniform in its application. The apparatus necessary is easily constructed from scrap material and requires little servicing.

Cyclodiathermy in Treatment of Glaucoma Due to Rubeosis Iridis Diabetica. Andrew deRoeth.

Arch. Ophth. 35:22 (Jan.) 1946.

Rubeosis iridis diabetica is one of the most disastrous ocular diseases, for it usually involves both eyes and, with rare exceptions, causes uncontrollable glaucoma.

In conclusion, it can be stated that after disappointing results with various types of operations, cyclodiathermy is the only procedure thus far found to lower the tension in cases of glaucoma due to rubeosis iridis diabetica. However, the treatment easily results in atrophy of the eyeball if used too extensively, particularly if both long posterior ciliary arteries are destroyed. These vessels should not be damaged if the rule laid down by Vogt is followed, if the applications are made in front of the insertion of the rectus muscles. But even if the cyclodiathermy is not done over a sufficiently large area to normalize the tension, it does alleviate the pain. Unfortunately, the progression of the damage to the retinal vessels cannot be checked.

Chorea. Joseph A. Johnston.

J. Michigan State M. Soc. 45:204 (Feb.) 1946.

In a disease as variable in severity and duration as chorea, and, in its pure form, carrying with it so small a chance of a complicating carditis, the results of treatment are difficult to evaluate. So striking, however, was the reduction in complications in Sutton and Dodge's follow-up of patients treated with fever induced by triple typhoid vaccine that it is recommended to all suitable cases. It should not be used when there is evidence of active carditis. Of twenty-five who received it, five developed carditis, but all of these had joint manifestations of rheumatic fever as well. In a few cases showing evidence of increased intracranial pressure; papilloedema and bradycardia, hypertonic glucose has seemed to have value. The Kettering hypertherm was tried but discontinued when it seemed to represent an exhausting experience, physically and emotionally.

Chorea is a mild manifestation of the rheumatic state; that uncomplicated by joint manifestations, the likelihood of carditis is small. The treatment of the active state is best accomplished with fever therapy induced by triple typhoid vaccine. Its development is largely conditioned by a poor nutritional background.

Shoulder and Arm Pain of Scalenus Anticus Origin. W. Craig Hendricks.

Pennsylvania M. J. 49:616 (March) 1946.

A review of the literature leaves the impression that surgical section of the scalenus anticus is the only treatment for this condition. There is no doubt such an operation is successful, but most of these people need not come to surgery; the majority can be cured by the methods to be set forth. They are available to practically every general practitioner and certainly conservative treatment should be used first. Its aim is to relax scalenus anticus spasm by attacking in three ways: First is local heat, infra-red rays, or diathermy; and low wave frequency seems the most efficient; second, lifting the shoulder by a sling, figure-of-eight bandage, or aeroplane splint; third, Reichert's three pillow arrangement. With the patient on his back, it brings the head and shoulders forward. With the patient lying on the bad side with his shoulder on the mattress, a thick pillow is placed between head and mattress to prevent the head rotating toward the bad side. If he lies on the good shoulder, a pillow is placed under the bad elbow and forearm to elevate the affected shoulder.

Novocaine injection of the anterior scalene was mentioned as a diagnostic aid; it is also excellent treatment, and repeated injections will cure many cases.

Traveller's Edema. K. Zacopoulos.

Brit. M. J. 4443:322 (March 2) 1946.

There is a form of edema caused by inactivity to which travellers by sea, rail, or road are subject. It is advisable to call this "traveller's edema," as only this term covers all the cases that may appear. It is a term preferred to two others which could be suggested: "inactivity edema" and "orthostatic edema." The first lays stress on the lack of movement but not on the vertical position of the lower extremities. Also we must not overlook the fact that inactivity alone in many cases does not cause edema. The second term lays emphasis on the standing position, a most important factor, as was observed in the second group of patients; but standing without inactivity will not cause edema of the ankles in healthy persons. Even patients with varicose veins will not develop edema if the heart is normal and their lower extremities are active.

Traveller's edema is caused purely mechanically in cases, in which there is a great diminution, or complete absence, of muscular movements of the extremities in persons who are sitting or standing for prolonged periods.

Repeated active or passive movements of the lower extremities must be started immediately. Tepid bathing of the feet is advisable, with simultaneous massage and passive movements of the toes, ankles and calves. An elastic stocking might

be tried for those who do not respond promptly to massage and tepid baths.

Travellers must be warned against complete inactivity and whenever possible must avoid standing up during long journeys.

Tissue Damage Due to Cold. Leiv Kreyberg.

Lancet 10:340 (March 9) 1946.

Empirical experience has already established the following principles of such treatment: Avoid rapid heating and avoid rubbing; place the limb in an elevated position and observe carefully the vascular reaction. If the vascular response is rapid and fulminating; with raised temperature of the skin, the limb should be moderately cooled but not returned to an injurious low temperature with ice packs or similar treatment. Learmonth and Ungley have proposed a simple treatment, "to nurse these patients on their face, with feet and legs uncovered and elevated, by an open window in default of a fan."

Keep the skin aired and dry to avoid maceration of the epidermis. A macerated tissue is more easily penetrated by bacteria from the surface. The changes which take place in the tissues during progressive exposure to cold and during subsequent warming are described. The initial changes are a purely physiologic adjustment to cold and it is not until exposure to cold has lasted that the reaction of the tissues become pathologic.

Three types of pathologic reactions are described: (1) after a short exposure to moderate cold; (2) after freezing to ice and return to normal temperature; and (3) after prolonged exposure to moderate cold not involving freezing to ice.

The underlying cause of all types of pathologic reaction to cold is an acute aseptic inflammation.

Diathermic Surgery of the Ciliary Body in Glaucoma. Experimental and Clinical Observations. Manuel Uribe Troncoso.

Am. J. Ophth. 29:289 (March) 1946.

When multiple perforations were made experimentally behind the limbus to reach the processes, the results were severe and these organs were destroyed. If the area of coagulation was extensive, intense reactions with exudates, hemorrhages and lens changes appeared.

Diathermic coagulations via the anterior approach were made after a corneal incision and a broad iridectomy had uncovered the ciliary body and processes. The electrode was pushed directly into the ciliary-body base above the processes. Four to five coagulations were made. The inflammatory reaction was not severe; the cornea was slightly opaque near the wound, a posterior synechia developed, and the lens showed a linear

opacity. The tension stayed low for 15 days and then returned to normal.

The author considers the results of diathermy disappointing from the standpoint of a permanent lowering of the intraocular pressure.

Perianal Urticaria. Charles J. Drueck, Sr.

Illinois M. J. 89:73 (Feb.) 1946.

The first indication obviously is diligent search for and removal of the cause when found. This includes a thorough study of the nervous system as regards any states inherited or acquired. The alkaline bath, which contains sodium carbonate, sodium baborate or magnesium sulphate in strength of 6 ounces to 30 gallons of water is beneficial. Sometimes a demulcent bath, made by adding starch, gelatine or bran acts well.

Electroshock Convulsion Therapy. W. E. Olson.

J. Lancet 66:71 (March) 1946.

One risk of electroshock therapy is that of fracture of one or more bodies of spinal vertebrae. This risk is lessened when the patient is carefully placed and restrained during the convulsion. Electroshock therapy has been used rather extensively at Fort Meade Hospital. The first treatment was given on June 26, 1945, and since then 38 patients have been treated or are under treatment. A total of 739 treatments have been given, with 649 grand mal and 90 petit mal reactions. In summary, from the experience with electroshock therapy at Fort Meade it is the opinion that it is a valuable aid in the treatment of psychiatric cases. In a number of cases the result has been gratifying.

Studies on Neuromuscular Dysfunction: Neostigmine Therapy of Chronic Disability Following Fractures. Report of 51 Cases. H. Kabat, and C. W. Jones.

Am. J. Surg. 71:55 (Jan.) 1946.

Kabat and Jones report on neostigmine therapy of 51 patients for neuromuscular dysfunction resulting from trauma. Twenty-three of the 51 patients had fractures of the upper extremity, 17 had fractures of the lower extremity, 7 had fractures of the vertebrae and 4 had multiple fractures. Excluding the disabilities which had been present longer than five years, the average duration of the disability was 11.2 months. Of 20 patients who were given daily injections of saline solution for one week as a placebo, only 2 showed improvement. Neostigmine was usually administered for two to three weeks. This treatment resulted in significant improvement in 39 of the 51 patients. Of the remaining 12, 4 showed slight improvement while the other 8 were without improvement. It has been possible to follow 27 of the 39 patients who showed significant improvement from neostigmine therapy for one to eight months after treatment was discontinued. In all except 1 the improvement was retained after res-

sation of drug administration. The therapeutic value of neostigmine in the treatment of chronic disability following fractures emphasizes the important role of neuromuscular dysfunction in these disabilities.

Therapeutics. J. F. Nash.

South. Med. & Surg. 108:75 (March) 1946.

Penicillin's greatest use is in the treatment of syphilis.

Vitamin A should be tried in follicular hyperkeratosis, keratosis pilaris, pityriasis rubra pilaris, and loss of skin tissue as from burns and ulcers. Vitamin C has been proved of value in certain types of keratotic lesions, petchial hemorrhages, and failure of wound healing; Vitamin D in psoriasis, acne vulgaris, pemphigus and scleroderma, in Downin's hands has been a failure. It stimulates healing in x-ray burns. Endocrine therapy in cutaneous diseases he thinks has tremendous possibilities. Physical therapy, light, x-rays and radium play an important role in dermatologic therapy. Unsightly pigmentation may follow their use in acute eruptions, and all physicians are cognizant of the severe injury to healthy tissue which results from their misuse.

Penicillin in the Treatment of Neurosyphilis. Paul A. O'Leary; Louis A. Brunsting, and Orville Ockuly.

J. A. M. A. 130:700 (March 16) 1946.

The administration of penicillin by the intravenous, intramuscular or intraspinal route, alone or in combination with fever therapy, both malarial and by machine, leads us to believe that penicillin alone is not capable of controlling the parenchymatous forms of neurosyphilis. However, in cases of the meningeal forms of the disease and in those in which there was a high degree of pleocytosis in association with asymptomatic neurosyphilis, the results thus far are encouraging.

Typical Headache of Essential Hypertension: Etiologic Considerations and Report of New Form of Therapy. A. A. Steiner.

M. Ann. District of Columbia 14:531 (Dec.) 1945.

On the premise that recumbency seems to favor production of the cephalalgia, Steiner instructed patients to elevate the headposts of their bed on 10 inch high blocks. Of 12 patients in whom elevation of the head of the bed during sleep was employed, 10 obtained dramatic relief of their complaint. Four patients required oral ergotamine therapy and obtained complete relief after a week's course of medication. In only 1 case was there partial failure. This patient was unable to sleep with more than 5 inch elevation of the head of her bed. Nicotinic acid was prescribed in several cases on the hypothesis that this headache, like migraine, is of a primary vasoconstrictor type. It was without value. Phenobarbital and thiocyanates were used prior to institution of the present therapy.

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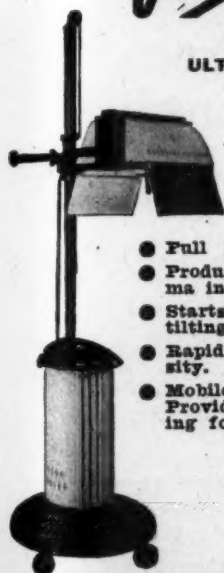
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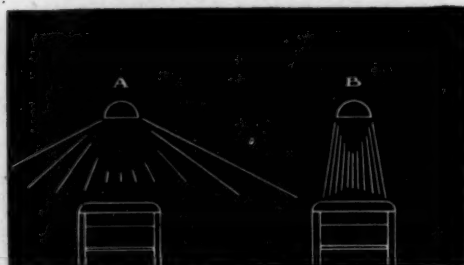
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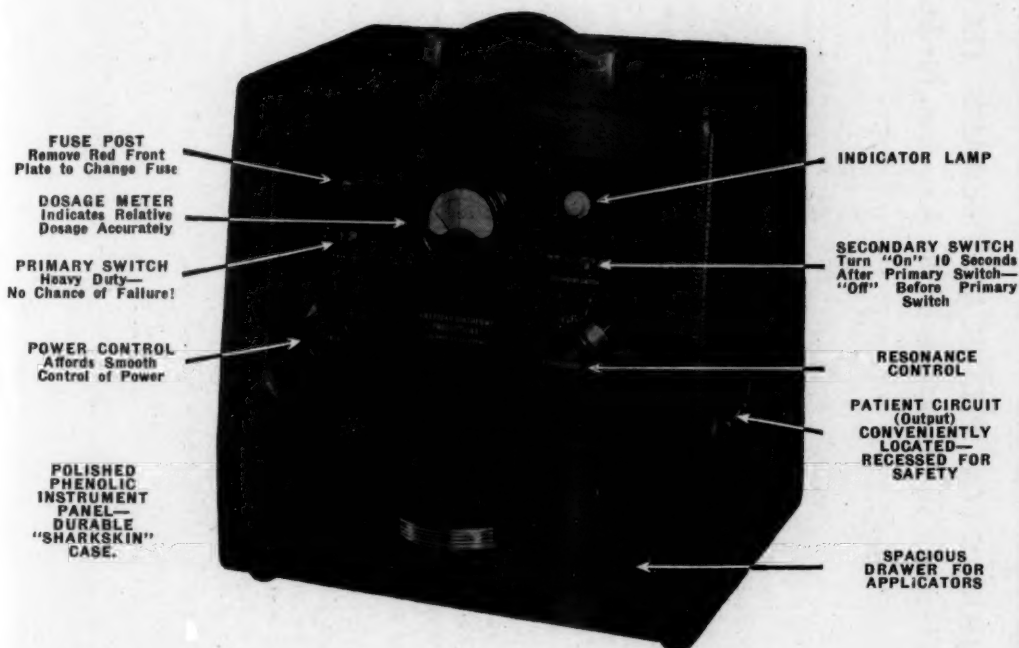
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4. High school graduates admitted to four-year course leading to degree from Tufts College.

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6. College graduates admitted to twelve-month certificate course.

† Reprinted J. A. M. A. 130:1166 (April 20) 1946.

** New curriculum to be announced.

APPROVED SCHOOLS FOR OCCUPATIONAL THERAPY TECHNICIANS *

Council on Medical Education and Hospitals of the American Medical Association

NOTE: The duration of the course is expressed in academic years and in most schools the accelerated curriculum is being followed.

Name and Location of School	College Affiliation	Duration of Course	Classes Start	Entrance Requirements	Tuition Per Year	Certificate, Diploma, Degree	Graduates in 1946
University of Southern California, 3551 University Ave., Los Angeles	University of Southern California	2 yrs.	Sept	Degree	\$330	Certificate	8
Mills College, Oakland, Calif.	Mills College	5 yrs.	FebSept	High sch.	\$330	Cert.&B.S.	4
San Jose State College, San Jose, Calif.	San Jose State College	3 yrs.	FebSept	Degree	\$200	Certificate	1
University of Illinois College of Medicine, 1853 W. Polk St., Chicago	University of Illinois	5 yrs.	FebSept	High sch.	\$450	Cert.&Deg.	1
University of Kansas, Lawrence	University of Kansas	3 yrs.	JanOct	1 yr. coll.	\$ 21	Certificate	1
Boston School of Occupational Therapy, 7 Harcourt St., Boston	Tufts College	5 yrs.	Varies	High sch.	\$ 21	Degree	None
Kalamazoo School of Occupational Therapy, Western Michigan College of Education, Kalamazoo	Western Michigan College of Education	4 1/2 yrs.	Varies	High sch.	\$ 80	B.S.	1
Michigan State Normal College, Ypsilanti	Michigan State Normal College and Univ. of Michigan	4 yrs.	FebSept	Degree	\$ 50	Certificate	1
St. Louis School of Occupational and Recreational Therapy, 4567 Scott Ave., St. Louis	University of Kansas	2 yrs.	FebSept	High sch.	\$ 50	B.S.	41
University of New Hampshire, Durham	Tufts College	2 yrs.	Sept	Degree	\$400	Diploma	20
Columbia University College of Physicians and Surgeons, 630 W. 168th St., New York City	Western Michigan College of Education	5 yrs.	Sept	1 yr. coll.	\$400	Diploma	41
New York University School of Education, 100 Washington Sq. E., New York City	Michigan State Normal College and Univ. of Michigan	2 yrs.	July	High sch.	\$51	Certificate	20
Ohio State University, Columbus	Michigan State Normal College and Univ. of Michigan	4 yrs.	FebSept	Degree	\$ 95	Cert.&Deg.	8
Philadelphia School of Occupational Therapy, 419 S. 19th St., Philadelphia	Michigan State Normal College and Univ. of Michigan	5 yrs.	Varies	High sch.	\$ 67	Cert.&Deg.	13
Richmond Professional Institute, 901 W. Franklin St., Richmond, Va.	Washington University	3 yrs.	Sept	2 yrs. coll.	\$350	B.S.	5
Milwaukee-Downer College, Dept. of Occupational Therapy, 2512 E. Hartford, Milwaukee	Univ. of New Hampshire	5 yrs.	Sept	High sch.	\$160	Cert.&Deg.	18
Mount Mary College, 2900 Menomonee River Dr., Milwaukee	Columbia University	2 yrs.	Sept	Degree	\$450	Certificate	13
University of Toronto, Dept. of University Extension, Toronto, Ont., Canada	New York University	3 yrs.	Sept	2 yrs. coll.	\$450	B.S.	11
	Ohio State University	4 1/2 yrs.	Quarterly	High sch.	\$450	Cert.&Deg.	45
	University of Pennsylvania	4 1/2 yrs.	Quarterly	High sch.	\$ 80	B.S.	4
	College of William and Mary	2 yrs.	Sept	Degree	\$400	Diploma	15
	Milwaukee-Downer College	3 yrs.	Sept	Degree	\$400	Diploma	7
	Mount Mary College	5 yrs.	Varies	High sch.	\$200	Dipl.&B.S.	40
	University of Toronto	2 1/2 yrs.	Sept	Degree	\$200	Certificate	
		3 yrs.	Sept	1 yr. coll.	\$250	Diploma	
		5 yrs.	Sept	High sch.	\$250	Dipl.&B.S.	
		3 yrs.	Sept	High sch.	\$210	B.S.	
		3 yrs.	Sept	1 yr. coll.	\$175	Diploma	



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OPPORTUNITIES

WANTED—PHYSICAL THERAPISTS FOR THE FOLLOWING: (a) To join staff of 10-man clinic having large compensation and orthopaedic service. (b) Young man well qualified in physical therapy to become associated with 15-man clinic established over forty years; organization operates own hospital of 125 beds; town of 50,000 located in a mountainous region at elevation of nearly 6,000 feet in far West. (c) To direct department of large municipal hospital; must be qualified to teach physical therapy in addition to administer a specialized activity; must be well qualified in the modern technique of handling infantile paralysis and cerebral palsy cases; \$1900-\$2300. (d) To succeed physical therapy technician who has been able to serve department on part-time basis only; department thoroughly equipped, 200-bed hospital; New England. (e) Department of physical therapy, 12-man group; winter resort town, Southwest. (f) Two; one of the leading hospitals in the Pacific Northwest. (g) Physical therapist and assistant physical therapist, large general hospital; Southern California; hours 8:30 to 5 with alternate week-ends off duty; salaries \$215 and \$180, respectively. (h) Two, registered; 300-bed hospital located in large city of Southeast; \$150-\$200, complete maintenance included.

For further information, please write,
BURNICE LARSON, Director, Medical Bureau,
Palmolive Building, Chicago 11.

HOTEL RATES

American Congress of Physical Medicine

September 3, 4, 5, 6, 7, 1946

Hotel Pennsylvania

New York City

Unless requested otherwise, we will hold your reservation until 9 p. m. of the day of your arrival.

Date Arriving.....	Hour.....	A. M.	P. M.
Room and Bath	3.85 <input type="checkbox"/>	5.50 <input type="checkbox"/>	
for One	4.40 <input type="checkbox"/>	6.05 <input type="checkbox"/>	
Per Day	4.95 <input type="checkbox"/>	6.60 <input type="checkbox"/>	
		7.15 <input type="checkbox"/>	
Double-Bed Room	5.50 <input type="checkbox"/>	7.70 <input type="checkbox"/>	
with Bath	6.05 <input type="checkbox"/>	8.25 <input type="checkbox"/>	
For Two—Per Day	6.60 <input type="checkbox"/>	8.80 <input type="checkbox"/>	
Twin-Bed Room		7.70 <input type="checkbox"/>	
with Bath	6.50 <input type="checkbox"/>	8.25 <input type="checkbox"/>	
For Two—Per Day	7.15 <input type="checkbox"/>	8.80 <input type="checkbox"/>	
SUITE—		11.00 <input type="checkbox"/>	
Living Room,			
Bed Room and Bath	10.00 <input type="checkbox"/>	13.00 <input type="checkbox"/>	

MORE THAN 2 PERSONS IN 1 ROOM
For each additional person in Double or Twin-Bed Room the extra charge is \$2.00 per day.

If a room at the rate requested is unavailable, reservation will be made at the next rate.

Twenty-third Annual Conference

American Physiotherapy Association

Blue Ridge Assembly, Blue Ridge, North Carolina, June 16 to June 21, 1946

Program Schedule

	Sunday June 16	Monday June 17	Tuesday June 18	Wednesday June 19	Thursday June 20	Friday June 21
8:00-10:00 a.m.		Registration*	V.A. Program: Donald Covalt, M.D., Chief of Rehabilitation, Veterans Administration, Washington, D. C.	P.T. in Treatment of Chest Conditions, Lt. Helen R. Winston, Fitzsimons General Hospital	P.T. in Treatment in Spinal Cord Injuries, 2nd Lt. Irja R. Ryssy, Ashford General Hospital	P.T. in Orthopedics with Special Reference to High Resistance, Low Repetition Exercise Program, 2nd Lt. Mary K. Doherty, Fitzsimons General Hospital
10:30-12:00 noon		Registration*	Phys. Med. & Rehab. in the United States Public Health Service, Lt. Col. A. Wm. Reggio, Washington, D. C.	P.T. in Overseas Installations, Capt. Olana M. Cole, Office of Surgeon General	War Dept. films pertaining to physical therapy activities in the Army	P.T. in Treatment of Vascular Conditions, 1st Lt. Georgiana Windham, Brooke General Hospital
				P.T. in Treatment of Head Injuries, 1st Lt. E. Blumenthal, Bushnell General Hospital	P.T. in Treatment of Amputees, 1st Lt. Paige Weaver, Walter Reed General Hospital	P.T. in Treatment of Neurosurgical Conditions, 1st Lt. Edna L. Dillon, Percy Jones General Hospital
12:30-1:30 p.m.	Luncheon	Luncheon	Luncheon	Luncheon	Luncheon	Luncheon
2:00-4:00 p.m.	Registration*	Infantile Paralysis Round Table: Wm. Greene, M.D. Jessie Wright, M.D. Robert Bennett, M.D.	Cerebral Palsy Co-Chairmen: Miss Esther Hutchinson Miss Elizabeth Lancot	Cerebral Palsy Co-Chairmen: Miss Esther Hutchinson Miss Elizabeth Lancot	House of Delegates	Report to Membership on School Section
4:00-5:30 p.m.		Rest and Relaxation	Rest and Relaxation	Rest and Relaxation	Rest and Relaxation	Rest and Relaxation
5:30-6:00 p.m.	Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
7:00-9:00 p.m.	P.T. School Section** Open to Membership	25th Anniversary Evening Meeting	House of Delegates	Executive Committee Allied Council	Evening Entertainment N. C. Chapter Hostesses	

* Registration fee: Members, \$2.00; nonmembers, \$3.00.

** The National Foundation for Infantile Paralysis is sponsoring meetings of the Medical and Technical Directors of the approved physical therapy schools. These meetings will be held prior to the opening of the conference. The session from 7:00 to 9:00 p.m., June 16th, will be open to any of the Association members who are interested.

Reprinted from *The Physiotherapy Review*, Vol. 26, No. 2, 1946.

MEETINGS OF INTEREST TO THOSE IN THE FIELD OF PHYSICAL MEDICINE

In these columns will be published information about meetings of interest to those in the field of physical medicine. New data should be sent promptly to the office of the Secretary, 2 E. 88th St., New York 28, N. Y.

American Congress of Physical Medicine, 24th Annual Session, Hotel Pennsylvania, New York, September 4, 5, 6 and 7, 1946; **Instruction Course** to be held during the meeting; Dr. Richard Kovács, 2 East 88th Street, New York 28, Secretary. See announcement elsewhere this issue.

Western Section, American Congress of Physical Medicine, San Francisco. Thursday, June 27th, Stanford University Hospital; Friday, June 28th, California Hospital. Dr. W. H. Northway, Stanford University Hospitals, Clay and Webster Streets, San Francisco 15, Calif., Secretary. See announcement elsewhere this issue.

Midwestern Section, American Congress of Physical Medicine, Chicago, Illinois. Dr. C. O. Molander, Michael Reese Hospital, Chicago, Secretary. See announcement elsewhere this issue.

National Rehabilitation Association, Hotel La Salle, Chicago, Illinois, May 13, 14 and 15, 1946. Mr. H. Earle Correvont, Director of Vocational Rehabilitation for Michigan, Chairman of Program Committee.

New York Society of Physical Medicine; meetings on first Wednesday, from October to May, New York City; Dr. Madge C. L. McGuinness, 51 East 87th Street, New York 28, Secretary.

The Pennsylvania Academy of Physical Medicine; meetings at the Philadelphia County Medical Building, 21st and Spruce Streets. For 1946 schedule inquire of Secretary, Dr. Harold Lefkoe, 1824 Spruce Street, Philadelphia 3.

Southern California Society of Physical Medicine, Secretary-Treasurer, Dr. Clarence Dail, 802 Acacia Street, San Gabriel, Calif.

American Physiotherapy Association, Annual Conference, June 16 to 22, 1946, Blue Ridge, N. C. Mildred Elson, Executive Secretary, 1790 Broadway, New York 19, N. Y. See announcement elsewhere this issue.

American Occupational Therapy Association, Congress Hotel, Chicago, August 11 to 15, 1946. Mrs. Meta R. Cobb, Executive Secretary, 33 West 42nd Street, New York 18, N. Y.

WANTED

Physical Therapist, male or female. Department established two years ago in 150 bed general hospital. New equipment, employing one technician. Expansion program planned for hospital and this department. Located in industrial town. Salary \$200.00 per month and meals. Fairmont General Hospital, Fairmont, W. Va.

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SAVINGS

BONDS

INSTRUCTION COURSE

In Conjunction with the

24th Annual Scientific and Clinical Session

AMERICAN CONGRESS OF PHYSICAL MEDICINE

September 4, 5, 6, 7, 1946

HOTEL PENNSYLVANIA

NEW YORK, N. Y.

	Wednesday September 4	Thursday September 5	Friday September 6
8 A.M. to 9 A.M.	(1) Peripheral Nerve Injuries (Physiologic Studies) (2) Anatomical Reasons for Foot Strain (Treatment)	(7) Physiologic Basis for Therapeutic Exercise (8) Fundamentals of Elec- tricity as Applied to Physical Medicine	(13) Rehabilitation of In- dustrial Injured (14) Physical Therapy to Injuries of the Hand
9 A.M. to 10 A.M.	(3) Pain (Types: Neurotic, Radiating or Referred, Causalgic, Ischemic) (4) Low Back Pain (Ana- tomical and Mechanical Basis)	(9) Reconditioning in Cer- tain Medical and Sur- gical Conditions (Car- diacs, Chest Surgery) (10) Prescription Writing in Physical Medicine	(15) Electrical Stimulation of Denervated Muscle (With Actual Demon- stration on a Model) (16) Use of Physical Ther- apy Following Various Fractures of the Extremities
1 P.M. to 2 P.M.	(5) Functional Anatomy of the Shoulder Girdle (6) Functional Anatomy of the Hand	(11) Essentials of Muscle Reeducation (12) Lecture and/or Dem- onstration (Crutch Walking)	(17) Rehabilitation of the Severely Disabled (18) Hydrotherapy and Spas (Present Status)

The course is intended primarily for physicians but a limited number of the members of the American Registry of Physical Therapy Technicians will also be admitted. One or more lectures may be taken, but nine lectures comprise a full schedule. The charge for single lectures is \$2.00; for the full schedule of nine lectures \$15.00.

For information and application form address

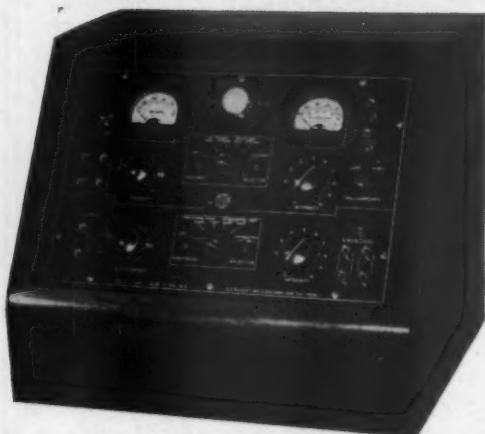
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Chicago 24, Ill.

OPPORTUNITIES

WANTED — PHYSICAL THERAPISTS FOR THE FOLLOWING: (a) To join staff of physical therapy department, 400-bed hospital; newly organized department; salary according to experience. (b) To direct department in 350-bed hospital; central metropolis; \$250 including meals, laundry. (c) To take charge of physical therapy department in teaching hospital; department averages 700 treatments monthly and is under direction of orthopedic surgeon, head of department in university medical school; East. (d) To take charge of department in medical center, operating in winter resort town of the Southwest; large percentage of work hydrotherapy; must be experienced in deep hydrotherapy pool exercises for muscle re-education of arthritic, rheumatic and orthopedic cases. (e) For position of chief physical therapist in one of the leading hospitals in New York City; unusual opportunity (f) For department of physical therapy, university hospital; recent graduate eligible. (g) To direct department of large municipal hospital; must be qualified to teach physical therapy in addition to administer a specialized activity; must be well qualified in the modern technic of handling infantile paralysis and cerebral palsy cases. (h) Young man well qualified in physical therapy to become associated with 15-man clinic established over forty years; organization operates own hospital of 125 beds; town of 50,000 located in a mountainous region at elevation of nearly 6,000 feet in far West.

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BURNEICE LARSON, Director, Medical Bureau,
Palmolive Building, Chicago 11.

AMERICAN CONGRESS OF PHYSICAL MEDICINE WESTERN SECTION

JUNE 27 and 28, 1946

SAN FRANCISCO

The officers of the Western Section of the Congress announce the presentation of a scientific program in San Francisco on Thursday and Friday, June 27th and June 28th.

The meetings will be held at the Stanford University Hospital on June 27th and at the University of California Hospital on June 28th.

SECTIONAL OFFICERS

CLARENCE DAIL, M.D.
Chairman, Western Section

WILLIAM H. NORTHWAY, M.D., Secretary
Stanford University Hospital,
San Francisco 15, California

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